Astronomy
QB1.U57, No427, pt1
D.A. STACKS

MARCH 1980 NUMBER 427 -- Part I

APR 28 1980

Solar-Geophysical Data prompt reports

Data for February 1980 -- January 1980

Explanation of Data Reports Issued as Number 426 (Supplement) February 1980

Late Data Pages 157-164

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Solar - Geophysical Data

NO. 427 MARCH 1980

Part I (Prompt Reports)

DATA FOR
FEBRUARY 1980
JANUARY 1980

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SOLAR-GEOPHYSICAL DATA

No. 427

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	414A 11	415A 11	416A 11	417A 9	418A 11	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9
A.8d	Daily Values of Adjusted Solar Flux (AFOL)	414A 11	415A 11	416A 11	417A 9	418A 11	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9
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A.9d	2 cm Radio Maps Of the Sun (NOBC - La Posta)	---	---	---	---	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 46	426A 50	427A 50	
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A.10f	3 cm East-West Solar Scans (Toyokawa)	414A 25	415A 26	416A 26	417A 22	418A 23	419A 25	420A 25	421A 26	422A 26	423A 28	424A 26	425A 25	426A 24	427A 24
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A.11y	Solar X-ray (SMS/GOES) (graphs)	419B 33	420B 53	421B 35	422B 31	423B 17	424B 29	425B 20	426B 24	427B 28					
A.12ba	Cosmic Ray Protons (Pioneers 6 & 7)	414A 36	---	---	---	---	---	---	---	---	---	---	---	---	---
A.12bb	Cosmic Ray Protons (Pioneers 8 & 9)	414A 37	---	---	---	---	---	---	---	424B 39	---	---	---	426A 32	427A 33
A.12c	Energetic Solar Particles (IMP H & J)	421B 43	420B 48	421B 30	422B 26	424B 40	427B 37	426B 33	427B 42						
A.13a	Solar Wind (Pioneers 6 & 7)	414A 35	---	---	---	---	---	---	---	---	---	---	---	---	427A 32
A.13ab	Solar Wind (Pioneers 8 & 9)	414A 37	---	---	---	---	---	---	---	424B 39	---	---	---	426A 32	427A 33
A.13d	Solar Wind from IPS Measurements	414A 39	415A 45	416A 39	417A 37	418A 35	419A 75	420A 37	422A 89	422A 39	424B 36	424A 37	426A146	426A 34	427A 35
A.13e	Solar Plasma (IMP H & J)	419B 32	419B 47	421B 29	422B 25	423B 17	424B 28	425B 19	426B 23	427B 27					
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A.17	Interplanetary Magnetic Field (Pioneer 8)	---	---	---	---	---	---	---	---	---	---	---	---	---	---
A.17	Interplanetary Magnetic Field (Pioneer 9)	414A 37	---	---	---	---	---	---	---	424B 39	---	---	---	426A 32	427A 33
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A.18	Interplanetary Electric Field (Pioneer 8)	---	---	---	---	---	---	---	---	---	---	---	---	---	---
A.18	Interplanetary Electric Field (Pioneer 9)	414A 37	---	---	---	---	---	---	---	424B 39	---	---	---	426A 32	427A 33
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B.52	Graphs of Transmission Frequency Range	415A162	416A166	417A166	418A166	419A168	420A166	421A166	422A178	423A174	424A154	425A152	426A142	427A154	
B.53	Quality Figures Based on Frequency Ranges	415A161	416A165	417A165	418A165	419A167	420A168	421A165	422A180	423A173	424A153	425A151	426A141	427A153	
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C.1d	Flare Patrol Observations	414A 23	415A 24	416A 24	417A 20	418A 23	419A 24	420A 23	421A 25	422B 72	423A 26	424A 24	425A 24	427A158	427A 22
C.1d	Flare Patrol Observations	420B120	422B 72	424B 45											
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C.1f	Flare Indices (by Region)	422B 91	423B 52												
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	Solar Radio Waves - Fixed Frequencies - Selected	414A 29	415A 30	416A 30	417A 26	418A 28	419A 27	420A 29	421A 30	422A 30	423A 32	424A 30	425A 29	426A 28	427A 28
C.3t	41.25, 80 and 160 MHz Selected Bursts (Culgoora)	415A147													
C.4a	Solar Radio Spectral Obs. (Fort Davis)	417B 60	417B 62	417A118	420B 72	420B 75	420A139	423B 76	423B 78	423A143	426A149	426A153	426A117	427A126	
C.4d	Solar Radio Spectral Obs. (Culgoora)	415A129	416A134	417A136	418A137	419A142	420A139	421A145	422A149	423A143	424A130	425A125	426A117	427A126	
C.4e	Solar Radio Spectral Obs. (Weissenau)	415A129	416A134	417A136	418A137	419A142	420A139	422A 86	422A149	423A143	424A130	425A125	426A117	427A126	
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	415A129	416A134	417A136	418A137	419A142	420A139	421A145	---	---	---	---	---	---	
C.4h	Solar Radio Spectral Obs. (Dwingeloo)	415A129	416A134	417A136	418A137	419A142	---	421A145	422A149	423A143	424A130	425A125	426A117	427A126	
C.4i	Solar Radio Spectral Obs. (Bleien)	415A129	416A134	417A138	418A137	419A142	---	---	422A149	423A143	424A130	425A125	426A117	427A126	
C.4j	Solar Radio Spectral Obs. (Manila)	415A129	416A134	417A138	418A137	419A142	420A139	421A145	422A149	---	424A130	425A125	426A117	427A126	
C.4k	Solar Radio Spectral Obs. (Learmonth)								422A149	423A143		425A125		427A126	
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C.5e	Solar X-ray (SMS/GOES) (graphs)	419B 33	420B 53	421B 35	422B 31	423B 17	424B 29	425B 20	426B 24	427B 28					
C.6	Sudden Ionospheric Disturbances	415A126	416A117	417A119	418A119	419A124	420A122	421A126	422A130	423A125	424A126	425A122	426A113	427A123	
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D.1ba	27-day Chart of Kp Indices	415A157	416A160	417A160	418A160	419A162	420A162	421A161	422A172	423A168	424A149	425A146	426A135	427A150	
D.1c	27-day Chart of C9	426A136	426A136	426A136	426A136	426A136	426A136	426A136	426A136	426A136	426A136	426A136	426A136		
D.1ca	aa Graph 1868 - present	426A137	426A137	426A137	426A137	426A137	426A137	426A137	426A137	426A137	426A137	426A137	426A137		
D.1d	Principal Magnetic Storms	415A158	416A161	417A163	418A163	419A165	420A165	421A164	422A175	423A171	424A152	425A149	426A140	427A151	
D.1e	Reduced Magnetograms														
D.1f	Sudden Commencement and Solar Flare Effects	415A160	416A164	418B 76	419B 63	419A166	421B 42	422B 90	422A177	423A172	425B 33	425A150	427A164	427A152	
D.1g	Equatorial Indices Dst	416B 90	416A162	417A162	418A162	419A164	420A164	421A163	422A174	423A170	424A151	425A148	426A139		
D.1h	Geomagnetic Substorm Log (Boulder)	414A 42	415A 42	416A 42	417A 38	418A 39	419A 39	420A 41	421A 41	422A 43	423A 42	424A 41	425A 38	426A 40	427A 40
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F.1a	Cosmic Ray Neutron Counts (Deep River)	415A154	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161	425B 32	427A159	427A159		
F.1b	Cosmic Ray Neutron Counts (Climax)	415A154	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161	425B 32	425A143	426A132		
F.1e	Cosmic Ray Neutron Counts (Alert)	415A154	416A151	417A151	418A151	420B 78	420A155	421A158	422A165	423A161	425B 32	427A159	427A159		
F.1f	Cosmic Ray Neutron Counts (Calgary)														
F.1h	Cosmic Ray Neutron Counts (Thule)	419B 62	419B 62	419B 62	419B 62	419A153	420A155	421A158	422A165	423A161	424A146	425A143	426A132	427A147	
F.1i	Cosmic Ray Neutron Counts (Kiel)	415A154	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161	427A159	425A143	426A132	427A147	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	415A154	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161	427A159	425A143	426A132	427A147	
F.1k	Cosmic Ray Neutron Counts (Kula)													---	
F.1l	Cosmic Ray Neutron Counts (Huancayo)		417B 67	418B 72	419B 58	420B 79	420A155	421A158	423B 61	425B 32	425B 32	426A177	427A159		
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Notes:

"415A 52" listed under 1979 Jan means that the sunspot drawings for January 1979 were contained in *Solar-Geophysical Data* Number 415 - Part I, beginning on page 52.

A = Part I, B = Part II.

----- = no data available.
Blank = data not yet received.

SGD 427 Part I (Prompt)

FEBRUARY 1980 DATA

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ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

FEBRUARY 1980

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS).

03 FEBRUARY 1980 BOULDER 03/1430Z SOFLARE M2/2B N13W10 03/1012Z DURATION 18 MINUTES.
SOFLARE M5/1B S15E17 04/1402Z IN PROGRESS DURATION GREATER THAN 60 MINUTES.
TENFLARE 620 FLUX UNITS 03/1318Z IN PROGRESS START TO MAXIMUM 18 MINUTES.
06 FEBRUARY 1980 BOULDER 06/1556Z PROTON EVENT BEGAN 06/1345Z 10 PROTONS/CM2/S/SR AT GREATER THAN 10 MEV
MAXIMUM 16 PROTONS/CM2/S/SR at 06/1500Z.
07 FEBRUARY 1980 BOULDER 07/1740Z SOFLARE C9/2B N13W59 07/1654Z DURATION 22 MINUTES.
08 FEBRUARY 1980 BOULDER 08/1440Z SOFLARE X2/NO OPTICAL N14W86 08/0901Z DURATION 34 MINUTES.
TENFLARE 440 FLUX UNITS 08/0904Z DURATION 14 MINUTES.
10 FEBRUARY 1980 BOULDER 10/2214Z SOFLARE M2/2B S18E10 10/1528Z DURATION 52 MINUTES.
TENFLARE 190 FLUX UNITS.
11 FEBRUARY 1980 SYDNEY 11/2200Z SOFLARE 1B N11E61 11/2039Z TYPE III/V RADIO BURST.
TENFLARE 245 FLUX UNITS 11/2037Z DURATION 2 MINUTES.
14 FEBRUARY 1980 SYDNEY 14/0325Z MAGSTORM BEGAN 14/0310Z 40-NANOTESLA SSC.
BOULDER 14/0413Z MAGSTORM BEGAN 14/0310Z 20-NANOTESLA SSC SMM SATELLITE LAUNCH SUCCESSFUL.
28 FEBRUARY 1980 BOULDER 28/1529Z TENFLARE 180 FLUX UNITS 28/1206Z DURATION 7 MINUTES.

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	No. of Flares: Total	M	X	Outstanding events	Forecasts: Date	Location Lat-Long	Desc*	Alert Situations
032	01	31	191	228	005	S10W56	0	0	0		01	S10W56	Q	SOLALERT MINOR 01
						S17W21	3	0	0			S17W21	E	MAGQUIET
						N05E04	2	0	0			N05E04	E	
						N16E02	0	0	0			N16E02	Q	
						N15E24	0	0	0			N15E24	A	
						S15E12	0	0	0			S15E12	Q	
						N15W38	0	0	0			N15W38	Q	
						N18E52	1	0	0			N18E52	Q	
						S15E52	6	1	0			S15E52	E	
						N13E35	0	0	0			N13E35	A	
						S12E75	0	0	0			S12E75	Q	
033	02	01	214	224	008	S10W71	0	0	0		02	S10W71	Q	SOLALERT 02/XX
						S20W34	0	0	0			S20W34	Q	MAGQUIET
						N05W11	1	0	0			N05W11	Q	
						N17W12	0	0	0			N17W12	Q	
						N15E10	0	0	0			N15E10	E	
						N16W52	0	0	0			N16W52	Q	
						N18E43	0	0	0			N18E43	Q	
						S15E38	5	0	0			S15E38	A	
						N13E22	6	1	0			N13E22	E	
						S11E59	0	0	0			S11E59	Q	
						N19E38	0	0	0			N19E38	Q	
						N18E55	0	0	0			N18E55	Q	
034	03	02	236	224	010	N05W24	1	0	0		03	N05W24	E	SOLALERT 03/05
						N16W25	1	0	0			N16W25	Q	MAGQUIET
						N15W05	1	0	0			N15W05	Q	
						N18E25	2	0	0			N18E25	Q	
						S15E24	4	0	0			S15E24	A	
						N13E05	0	0	0			N13E05	E	
						S11E47	0	0	0			S11E47	Q	
						N19E22	0	0	0			N19E22	Q	
						N17E37	0	0	0			N17E37	E	
						S13W26	0	0	0			S13W26	Q	
						N26E77	0	0	0			N26E77	Q	
035	04	03	254	233	003	N05W37	2	0	0	BOULDER 03/1430Z SO-	04	N05W37	E	SOLALERT 04/XX
						N16W37	0	0	0	FLARE N13W10 M2/2B		N16W37	Q	MAGALERT 05/06
						N15W19	2	1	0	03/1012Z DURATION		N15W19	A	
						N18E14	0	0	0	18 MIN. SOFLARE		N18E14	Q	
						S15E11	3	1	0	M5/1B S15E17		S15E11	A	
						N12W08	0	0	0	03/1402Z IN PROGRESS		N12W08	Q	
						S24W07	0	0	0	DURATION GREATER		S24W07	Q	
						S12E35	0	0	0	THAN 60 MIN. TEN-		S12E35	Q	
						N19E05	0	0	0	FLARE 620 FLUX UNITS		N19E05	Q	
						N17E23	0	0	0	03/1318Z IN PROGRESS		N17E23	E	
						S13W41	0	0	0	START TO MAXIMUM 18		S13W41	Q	
						N26E66	0	0	0	MIN.		N26E66	Q	
						N03E27	0	0	0			N03E27	Q	
036	05	04	265	238	004	N05W51	0	0	0		05	N05W51	Q	SOLALERT 05/XX
						N16W51	3	0	0			N16W51	Q	MAGALERT 05/06
						N15W35	4	1	0			N15W35	E	
						N18E02	0	0	0			N18E02	Q	
						S15W01	2	0	0			S15W01	A	
						N14W27	0	0	0			N14W27	Q	
						S13E24	1	0	0			S13E24	Q	
						N19W07	2	1	0			N19W07	E	
						N18E10	4	0	0			N18E10	E	
						N26E52	1	0	0			N26E52	Q	
						N04E13	0	0	0			N04E13	Q	
						S26W33	0	0	0			S26W33	Q	
						S12E76	1	0	0			S12E76	E	
037	06	05	186	225	005	N15W64	0	0	0		06	N15W64	Q	SOLALERT 06/08
						N15W45	1	0	0			N15W45	E	MAGNIL
						S15W15	2	1	0			S15W15	A	
						N13W40	0	0	0			N13W40	Q	
						N19W22	0	0	0			N19W22	E	
						N17W07	0	0	0			N17W07	Q	
						N26E38	1	0	0			N26E38	Q	
						N04W04	0	0	0			N04W04	Q	
						S25W46	0	0	0			S25W46	E	
						S12E65	4	0	0			S12E65	E	
038	07	06	252	228	028	N17W81	0	0	0	BOULDER 06/1556Z	07	N17W81	Q	SOLALERT 07/08
						N15W61	0	0	0	PROTON EVENT BEGAN		N15W61	E	MAGALERT 07
						S15W28	1	0	0	06/1345Z 10 PROTONS/		S15W28	A	
						N14W52	0	0	0	CM2/S/SR AT GREATER		N14W52	Q	
						S11W09	0	0	0	THAN 10 MEV MAXIMUM		S11W09	Q	
						N20W35	0	0	0	16 PROTONS/CM2/S/SR		N20W35	E	
						N18W20	0	0	0	AT 06/1500Z.		N18W20	E	
						N27E25	1	0	0			N27E25	Q	
						N05W17	0	0	0			N05W17	Q	
						S25W61	0	0	0			S25W61	Q	
						S13E52	4	0	0			S13E52	A	
						N08E37	0	0	0			N08E37	Q	

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039	08	07	244	232	011	N14W71	2	0	0	BOULDER 07/1740Z	08	N14W71	Q	SOLALERT 08/09
						S16W41	6	0	0	SOFLARE C9/2B		S16W41	E	MAGNIL
						N17W52	0	0	0	N13W59 07/1654Z		N17W52	Q	
						N17W33	0	0	0	DURATION 22 MIN.		N17W33	Q	
						N27E11	0	0	0			N27E11	Q	
						N02W30	5	0	0			N02W30	E	
						S23W73	0	0	0			S23W73	Q	
						S13E39	8	0	0			S13E39	E	
						N09E23	1	0	0			N09E23	Q	
						S13E54	0	0	0			S13E54	Q	
						S18E59	1	0	0			S18E59	Q	
040	09	08	246	225	013	N14W86	1	0	1	BOULDER 08/1440Z	09	N14W86	Q	SOLALERT 09/XX
						S15W54	2	0	0	SOFLARE X2 NO		S15W54	A	MAGALERT 09/XX
						N19W66	0	0	0	OPTICAL N14W86		N19W66	Q	
						N16W50	0	0	0	08/0901Z DURATION		N16W50	Q	
						N28W03	1	0	0	34 MIN. TENFLARE		N28W03	Q	
						N03W43	4	0	0	440 FLUX UNITS		N03W43	A	
						S13E25	3	0	0	08/0904Z DURATION		S13E25	E	
						N09E07	0	0	0	14 MIN.		N09E07	Q	
						S12E44	2	0	0			S12E44	Q	
						S18E45	0	0	0			S18E45	Q	
						N12E19	0	0	0			N12E19	Q	
041	10	09	185	217	013	S17W66	2	0	0		10	S17W66	A	SOLALERT 10/XX
						N15W65	0	0	0			N15W65	Q	MAGALERT 10/XX
						N27W16	2	0	0			N27W16	A	
						N03W58	0	0	0			N03W58	A	
						S13E10	0	0	0			S13E10	A	
						N09W08	0	0	0			N09W08	Q	
						S12E26	1	0	0			S12E26	Q	
						S18E29	0	0	0			S18E29	Q	
						N09E00	0	0	0			N09E00	Q	
042	11	10	201	221	004	S17W77	0	0	0	BOULDER 10/2214Z	11	S17W77	Q	SOLALERT 11/13
						N17W77	0	0	0	SOFLARE M2/2B S18E10		N17W77	Q	MAGALERT 11/12
						N27W29	2	0	0	10/1528Z DURATION 52		N27W29	E	
						N03W71	1	0	0	MIN. TENFLARE 190		N03W71	E	
						S13W03	3	1	0	FLUX UNITS.		S13W03	A	
						N10W20	0	0	0			N10W20	Q	
						S12E13	0	0	0			S12E13	Q	
						S18E18	0	0	0			S18E18	Q	
						N08W10	0	0	0			N08W10	Q	
						N08E73	6	3	0			N08E73	A	
						N13E49	0	0	0			N13E49	Q	
043	12	11	144	219	004	S18W87	2	0	0	SYDNEY 11/2200Z SO-	12	S18W87	E	SOLALERT 12
						[illegible]5W42	2	0	0	FLARE 1B N11E61		N26W42	Q	MAGNIL
						1W84	0	0	0	11/2039Z TYPE III/V		N04W84	Q	
						>12W18	5	0	0	RADIO BURST. TEN-		S12W18	E	
						N10W34	8	0	0	FLARE 245 FLUX UNITS		N10W34	E	
						S10W00	0	0	0	11/2037Z DURATION 2		S10W00	Q	
						N08E62	12	1	0	MIN.		N08E62	A	
						S18E75	0	0	0			S18E75	Q	
044	13	12	132	219	004	N27W54	0	0	0		13	N27W54	Q	SOLALERT 13/14
						S12W32	4	0	0			S12W32	E	
						N10W49	6	0	0			N10W49	E	
						S13W13	0	0	0			S13W13	Q	
						N09E50	3	0	0			N09E50	A	
						S18E66	2	0	0			S18E66	E	
						N25E57	0	0	0			N25E57	Q	
045	14	13	116	223	004	S11W50	9	0	0		14	S11W50	E	SOLALERT MINOR 14/15
						N10W64	4	0	0			N10W64	E	MAGQUIET
						S14W30	1	0	0			S14W30	Q	
						N09E36	4	0	0			N09E36	A	
						S17E56	5	0	0			S17E56	E	
						N25E46	1	0	0			N25E46	Q	
046	15	14	159	209	015	S10W64	1	0	0	SYDNEY 14/0325Z MAG-	15	S10W64	E	SOLALERT 15/16
						N11W76	0	0	0	STORM BEGAN		N11W76	Q	MAGALERT MINOR 15
						N08E23	0	0	0	14/0310Z 40-NANO-		N08E23	A	
						S20E47	3	0	0	TESLA SSC. BOULDER		S20E47	E	
						N21E35	0	0	0	14/0413Z MAGSTORM		N21E35	Q	
						S22W00	0	0	0	BEGAN 14/0310Z 20-		S22W00	Q	
										NANOTESLA SSC SMM				
047	16	15	149	214	020	S10W75	3	0	0	SATELLITE LAUNCH	16	S10W75	E	SOLALERT 16/XX
						N10W86	2	0	0	SUCCESSFUL.		N10W86	Q	MAGALERT 16
						N09E12	0	0	0			N09E12	E	
						S19E36	7	0	0			S19E36	A	
						N23E20	0	0	0			N23E20	Q	
						S22W12	1	0	0			S22W12	Q	
						S26E73	0	0	0			S26E73	Q	

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048	17	16	160	205	036	N10W03	1	0	0		17	N10W03	E	SOLALERT 17/18
						N17W35	1	0	0			N17W35	E	MAGALERT 17/XX
						S18E19	3	0	0			S18E19	E	
						N23E04	0	0	0			N23E04	Q	
						S21W27	0	0	0			S21W27	Q	
						S25E56	0	0	0			S25E56	Q	
						N10E77	0	0	0			N10E77	Q	
049	18	17	131	191	004	N09W17	2	0	0		18	N09W17	E	SOLNIL
						N16W48	1	0	0			N16W48	E	MAGNIL
						S18E05	1	0	0			S18E05	E	
						N25W03	0	0	0			N25W03	Q	
						S22W42	0	0	0			S22W42	Q	
						S26E43	0	0	0			S26E43	Q	
						S10E67	2	0	0			S10E67	E	
050	19	18	138	187	008	N10W30	3	0	0		19	N10W30	E	SOLQUIET
						N14W66	0	0	0			N14W66	Q	MAGQUIET
						S19W08	1	0	0			S19W08	Q	
						N23W23	0	0	0			N23W23	Q	
						S24E31	0	0	0			S24E31	Q	
						S09E57	2	0	0			S09E57	E	
						N13E67	0	0	0			N13E67	Q	
051	20	19	165	182	008	N08W46	0	0	0		20	N08W46	E	SOLQUIET
						N15W84	0	0	0			N15W84	Q	MAGQUIET
						S18W21	1	0	0			S18W21	Q	
						N24W36	2	0	0			N24W36	Q	
						S25E18	0	0	0			S25E18	Q	
						S10E40	5	0	0			S10E40	E	
						N10E56	0	0	0			N10E56	Q	
						S09W04	0	0	0			S09W04	Q	
						S17W31	0	0	0			S17W31	Q	
052	21	20	135	179	006	N08W59	1	0	0		21	N08W59	E	SOLQUIET
						S18W31	1	0	0			S18W31	Q	MAGQUIET
						S25E04	0	0	0			S25E04	Q	
						S10E25	4	0	0			S10E25	A	
						N09E41	0	0	0			N09E41	Q	
						S09W18	0	0	0			S09W18	Q	
						S17W42	0	0	0			S17W42	Q	
053	22	21	113	173	007	N08W74	0	0	0		22	N08W74	E	SOLQUIET
						S19W42	0	0	0			S19W42	Q	MAGQUIET
						S10E13	2	0	0			S10E13	Q	
						N10E27	0	0	0			N10E27	Q	
						S18W54	1	0	0			S18W54	Q	
						S09W31	0	0	0			S09W31	Q	
						S11E70	0	0	0			S11E70	Q	
054	23	22	129	171	005	N07W86	0	0	0		23	N07W86	E	SOLQUIET
						S19W55	0	0	0			S19W55	Q	MAGQUIET
						S12W00	0	0	0			S12W00	Q	
						N11E14	0	0	0			N11E14	E	
						S18W70	0	0	0			S18W70	E	
						S09W44	0	0	0			S09W44	E	
						S11E57	0	0	0			S11E57	E	
055	24	23	120	164	013	S18W67	0	0	0		24	S18W67	Q	SOLQUIET
						S11W15	0	0	0			S11W15	E	MAGALERT MINOR 24/25
						N10E00	0	0	0			N10E00	E	
						S16W80	0	0	0			S16W80	Q	
						S07W62	0	0	0			S07W62	Q	
						S13E43	2	0	0			S13E43	E	
						N14E76	0	0	0			N14E76	Q	
						N06W07	0	0	0			N06W07	E	
056	25	24	134	162	008	S10W28	1	0	0		25	S10W28	Q	SOLQUIET
						N10W13	1	0	0			N10W13	E	MAGNIL
						S08W75	0	0	0			S08W75	Q	
						S12E30	0	0	0			S12E30	E	
						N17E62	0	0	0			N17E62	Q	
						N06W23	0	0	0			N06W23	Q	
						S25E72	2	0	0			S25E72	E	
						S17E22	0	0	0			S17E22	Q	
						S13E81	0	0	0			S13E81	E	
057	26	25	134	169	008	S10W42	0	0	0		26	S10W42	Q	SOLQUIET
						N10W26	0	0	0			N10W26	Q	MAGQUIET
						S12E17	0	0	0			S12E17	Q	
						N15E50	0	0	0			N15E50	Q	
						S25E60	3	0	0			S25E60	E	
						S16E08	0	0	0			S16E08	Q	
						S13E68	3	3	3			S13E68	E	
						N28W01	0	0	0			N28W01	Q	
						S15E82	0	0	0			S15E82	Q	

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058	27	26	186	172	013	S11W55	0	0	0		27	S11W55	Q	SOLALERT MINOR 27/XX
						N10W39	1	0	0			N10W39	E	MAGQUIET
						S11E05	0	0	0			S11E05	Q	
						N16E38	0	0	0			N16E38	Q	
						S24E47	2	0	0			S24E47	E	
						S12E53	5	0	0			S12E53	E	
						N27W14	0	0	0			N27W14	Q	
						S16E71	0	0	0			S16E71	Q	
						N05E20	0	0	0			N05E20	Q	
						N03E73	0	0	0			N03E73	Q	
						S33W31	0	0	0			S33W31	Q	
						N18E82	1	1	0			N18E82	A	
059	28	27	238	177	012	S08W67	0	0	0		28	S08W67	Q	SOLALERT MINOR 28/XX
						N11W53	1	0	0			N11W53	Q	MAGQUIET
						S10W11	4	0	0			S10W11	E	
						N15E27	0	0	0			N15E27	Q	
						S27E31	1	0	0			S27E31	E	
						S13E38	1	1	0			S13E38	E	
						N29W23	0	0	0			N29W23	Q	
						S18E56	0	0	0			S18E56	Q	
						N05E05	0	0	0			N05E05	Q	
						N01E62	0	0	0			N01E62	Q	
						S32W44	0	0	0			S32W44	Q	
						N17E68	1	0	0			N17E68	E	
						N03E57	0	0	0			N03E57	Q	
						S06W57	0	0	0			S06W57	Q	
						N18W26	0	0	0			N18W26	Q	
						N13E04	0	0	0			N13E04	Q	
						S19E67	0	0	0			S19E67	Q	
060	29	28	272	177	010	S10W79	0	0	0	BOULDER 18/1529Z TENFLARE 180 FLUX UNITS DURATION 7 MIN.	29	S10W79	Q	SOLNIL
						N10W71	0	0	0			N10W71	Q	MAGQUIET
						S10W24	0	0	0			S10W24	E	
						N16E12	0	0	0			N16E12	Q	
						S24E20	0	0	0			S24E20	Q	
						S13E30	0	0	0			S13E30	Q	
						N30W37	1	0	0			N30W37	Q	
						S18E44	0	0	0			S18E44	Q	
						N05W08	0	0	0			N05W08	Q	
						N02E45	0	0	0			N02E45	Q	
						S31W59	0	0	0			S31W59	Q	
						N15E53	0	0	0			N15E53	Q	
						N03E44	0	0	0			N03E44	Q	
						S07W70	0	0	0			S07W70	E	
						N16W40	0	0	0			N16W40	Q	
						N11W16	0	0	0			N11W16	Q	
						S19E56	0	0	0			S19E56	Q	
						N16E08	0	0	0			N16E08	Q	
061	01	29	226	185	008	N08W86	0	0	0		01	N08W86	Q	SOLQUIET
						S10W39	0	0	0			S10W39	E	MAGQUIET
						S24E06	1	1	0			S24E06	E	
						S13E17	0	0	0			S13E17	E	
						S18E31	1	0	0			S18E31	Q	
						N05W21	0	0	0			N05W21	Q	
						N01E32	2	0	0			N01E32	Q	
						N15E40	0	0	0			N15E40	Q	
						N03E31	0	0	0			N03E31	Q	
						S09W86	0	0	0			S09W86	E	
						N11W28	0	0	0			N11W28	Q	
						S19E40	1	0	0			S19E40	Q	
						S27W54	2	0	0			S27W54	E	
						S10W02	0	0	0			S10W02	Q	
						N24E20	0	0	0			N24E20	Q	

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

RELATIVE SUNSPOT NUMBERS

ZURICH, R_Z

1979 PROVISIONAL — 1980 PROVISIONAL

DAY	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
1	116	131	108	121	158	115	165	213	224	122	153	208
2	138	134	106	152	168	96	141	187	157	156	158	187
3	141	135	103	161	205	121	148	167	155	187	148	185
4	142	138	112	178	219	110	157	156	172	218	173	182
5	135	109	113	207	232	93	139	168	166	232	198	178
6	144	91	122	226	249	104	139	168	210	206	207	215
7	146	77	148	222	223	110	178	179	254	212	218	248
8	143	69	165	220	219	132	192	198	288	272	225	238
9	146	61	162	231	191	115	198	218	279	293	262	172
10	148	87	145	205	163	92	177	178	302	286	224	148
11	156	109	148	186	155	84	167	183	295	279	245	148
12	178	107	158	199	145	87	156	189	248	272	218	135
13	169	113	163	172	142	91	175	211	183	235	181	131
14	159	116	203	149	127	119	186	213	218	230	178	146
15	155	117	207	127	121	135	177	198	186	225	146	168
16	138	119	187	103	114	122	178	185	166	220	166	163
17	142	107	184	122	109	138	155	221	253	188	160	132
18	142	98	148	126	109	157	177	224	172	151	130	122
19	138	79	109	110	135	176	195	221	174	138	118	129
20	128	68	107	111	158	187	191	219	153	126	115	139
21	134	68	114	124	151	218	184	215	131	131	121	114
22	148	79	121	108	152	216	178	198	123	148	123	99
23	139	79	117	96	154	206	219	186	142	132	124	108
24	118	88	119	90	143	203	236	161	162	138	128	122
25	114	85	124	128	144	201	252	153	155	161	107	121
26	114	118	123	132	142	182	261	145	141	127	127	152
27	117	125	118	112	146	189	256	143	115	93	128	175
28	114	132	110	128	132	174	239	142	119	98	138	197
29	118	132	113	124	148	158	235	191	98	121	122	181
30	127	128	96	154	158	150	233	197	116	139	145	
31	147		128		144	168		223		135	174	
MEAN	137.0	102.8	134.6	158.5	159.6	143.5	188.7	188.2	185.0	182.2	162.2	159.3

1978 yearly mean = 92.5

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

1979 — 1980

DAY	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
1	168.5	202.6*	188.4	189.5	186.3	149.1	175.8	212.8	211.6	161.9	189.1	212.6*
2	178.7	203.4	179.2	206.8*	208.9*	143.9*	188.1	211.5	209.5	172.0*	199.9	217.9
3	173.3	194.2	164.3	216.1*	213.4	145.1	188.8	204.7	207.5	195.1*	211.9*	225.7
4	181.4	183.5	176.8	228.8*	218.1	141.7	175.3*	197.7*	214.2	221.8	212.4*	231.7
5	188.1*	179.3	169.6	238.2	204.5	141.6	177.1	192.8*	235.5	223.4*	207.7	218.9
6	182.4	176.3	171.1*	238.1	211.3	149.5	180.4*	195.5	273.2*	223.4	222.1	221.7
7	183.1*	166.7	178.8	238.1	207.2	151.1	186.3	197.8	286.9*	222.6	228.8	223.9*
8	178.9	169.8*	182.4*	242.7	206.7	152.7	183.6	200.3	310.1	228.9*	228.1*	218.7
9	181.4	169.6	181.3	247.4*	197.9*	157.3	187.4	209.5	314.4*	232.4	240.9*	208.2*
10	180.6	173.0	174.7	239.9	185.9	152.1*	184.6	208.7	367.8*	230.3	253.8*	204.6*
11	181.7*	170.8*	178.6	229.6	178.6	154.4	181.5*	211.8	325.7*	230.6*	255.7*	213.7
12	188.7	174.5	184.2	208.3	170.1	144.8	181.7	216.4	294.4	232.3	245.1*	213.7
13	186.3	175.8	186.6	193.7	161.4	155.8	186.1	239.1	272.7	231.7	221.6	217.9
14	189.4	170.9	182.8	185.7	154.7*	158.2*	192.6*	236.4	256.4	238.3	203.8	201.8
15	181.3	168.1	181.9	176.8	151.1	167.6	193.8	230.7	239.7*	231.8	200.8	201.2*
16	183.5*	171.7	176.4	167.5	143.6	164.8	196.3*	232.3	230.6	216.3	188.6	200.2
17	177.7	168.8	187.7	158.1	142.7	165.8	202.7*	226.8	231.8	202.2	186.9	182.8*
18	188.6*	158.7	171.3*	152.6	141.2	180.8	215.7	236.8	231.9	187.4	177.5	188.8*
19	177.6	159.4	161.5	146.2	143.6	186.4	218.1*	237.3*	214.8	183.8	164.4	177.3
20	184.1	156.1	155.6	151.5	146.6	204.2*	213.9*	236.7*	205.9	188.8*	156.5	174.7
21	182.2	161.5	155.7	148.9	143.7*	207.6*	218.4	238.1	189.8	176.7*	153.4	169.6
22	181.1	159.7*	156.5*	141.1	155.7	223.2	216.5	221.9	182.5	175.3	158.2*	167.3
23	188.5	162.3	156.8	139.8	163.1*	218.6	224.2*	214.9*	183.2	168.6	166.7	168.1
24	188.3	161.9	159.2*	141.2	168.6	225.2	230.7	225.6*	175.2*	168.2	171.1*	157.2*
25	188.2	172.5	153.3*	147.8	164.5	229.3*	235.5	215.2	165.8*	162.8	171.3*	165.7
26	200.2	182.8	149.1	153.7	165.6	223.3	229.9*	202.9	161.6	159.7	178.8*	169.8
27	187.9	195.1*	149.4	158.5	159.1*	212.8	228.7*	211.2	155.7	153.6*	190.6*	173.2
28	188.6	192.1*	149.2	159.1	158.1	214.2	233.8	210.8	158.1	163.1	194.8	171.7*
29	191.4	185.7	150.2	166.9	156.7	197.6	225.8	214.8	154.8	174.8	197.8	176.7*
30	186.6	185.2*	150.4	176.7*	160.3	187.8	231.9	213.7*	152.2	185.5	197.9	
31	201.4*		174.9		152.4	179.9		214.9*		188.9	213.9*	
MEAN	184.8	175.8	168.9	186.8	171.4	177.8	202.3	216.4	226.8	197.2	199.6	195.1

* adjusted for burst
A = interpolated data point

DAILY SOLAR INDICES

DAILY SOLAR INDICES

FEBRUARY 1980

FEB 1980	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	32	19	208	148	218.9*	580	395	237	212.6*	217	162		46	
2	33	20	187	163	224.4	578	402	241	217.9	227	170		51	
3	34	21	185	153	232.4	581	414	248	225.7	234	179		66	
4	35	22	182	162	238.4	591	429	267	231.7	237	171		47	
5	36	23	178	161	225.2	579	427	246	218.9	226	160		44	
6	37	24	215	181	228.1	592	429	231	221.7	223	167		54	
7	38	25	248	182	230.1*	583	411	250	223.9*	226	163		32	21
8	39	26	230	162	224.8	553	414	241	218.7	220	164		48	27
9	40	27	172	128	214.0*	579	403	231	208.2*	210	161		61	48
10	41	1	140	118	210.1*	589	419	245	204.6*	218	161		75	
11	42	2	148	134	219.4	593	420	261	213.7	209	151		84	
12	43	3	135	113	219.4	584	420	246	213.7	220	150		49	
13	44	4	131	104	223.5	590	410	243	217.9	218	157		59	
14	45	5	146	123	206.2	569	376	218	201.0	203	150		47	
15	46	6	168	136	206.4*				201.2*					
16	47	7	163	136	205.1	557	367	212	200.2	199	150		44	
17	48	8	132	110	187.3*	565	371	201	182.8*	196	143		47	
18	49	9	122	93	184.2*	533	371	191	180.0*	179	138		44	
19	50	10	129	119	181.5	573	365	193	177.3	185	136		38	
20	51	11	139	104	178.6	569	358	187	174.7	175	131		41	
21	52	12	114	104	173.4	563	358	190	169.6	170	127		42	24
22	53	13	99	92	171.1	555	357	184	167.3	170	127		52	
23	54	14	100	85	163.5	562	348	176	160.1	158	120		41	
24	55	15	122	98	160.6*	528	335	175	157.2*	154	118		42	
25	56	16	121	99	169.1				165.7					
26	57	17	152	134	172.4	585	371	198	169.0	176	133		48	
27	58	18	175	155	176.6	576	410	186	173.2	175	146		43	
28	59	19	197	149	175.0*	580	366	189	171.7*	184	146		38	
29	60	20	181	154	179.9*	582	372	197	176.7*	187	155		46	
MEAN			159.3	131.0	200.0	573	389	217	195.1	199	150		49	30

* Adjusted for burst.

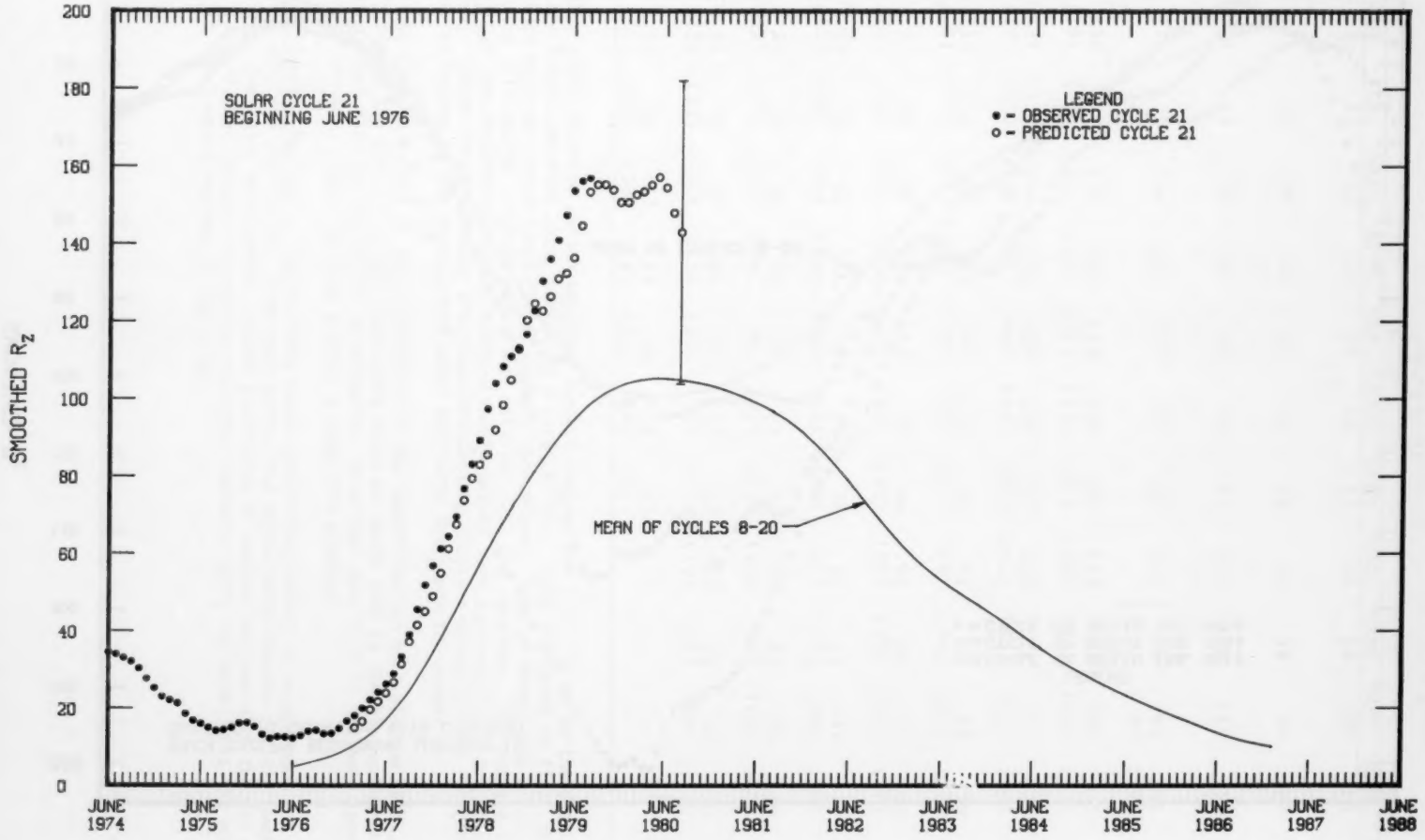
Note: Data gaps in AFGL Sagamore Hill data are due to equipment problems.

OBSERVED AND PREDICTED SOLAR ACTIVITY INDICES

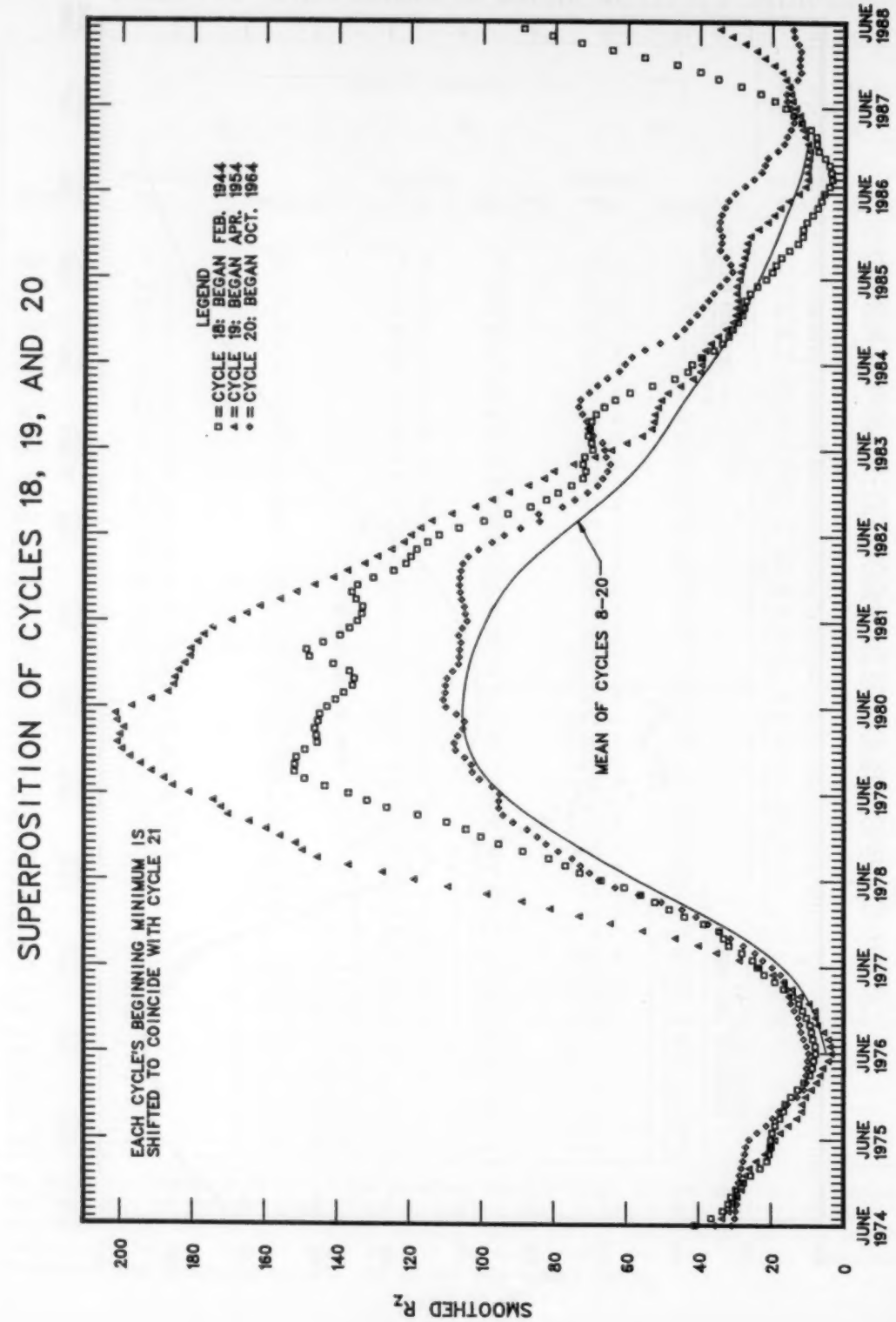
	SUNSPOT NUMBERS						2800 MHz FLUX adjusted to 1 AU	
	Rz		Ra		Rs		Sa	
Date	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed	Monthly Mean	Smoothed
Mar 77	8.7	20	8.0	18	19.9	25	75.8	80
Apr	12.9	22	10.7	21	22.5	27	78.2	82
May	18.6	24	16.0	23	25.9	29	81.4	84
Jun	38.5	26	34.4	25	40.1	31	94.5	86
Jul	21.4	29	18.3	27	28.4	33	83.7	88
Aug	30.1	33	27.6	32	31.3	36	86.4	91
Sep	44.0	39	41.9	37	47.0	40	100.9	95
Oct	43.8	46	45.5	44	42.0	45	96.3	99
Nov	29.1	52	28.4	50	36.9	50	91.6	104
Dec	43.2	57	42.8	55	44.8	54	98.9	108
Jan 78	51.9	61	48.8	59	52.6	57	106.1	111
Feb	93.6	64	90.9	61	91.1	60	141.8	113
Mar	76.5	70	73.9	66	89.5	63	140.3	116
Apr	99.7	77	97.5	72	100.5	67	150.5	119
May	82.7	83	79.6	78	99.7	71	149.7	123
Jun	95.1	89	88.0	84	96.5	75	146.8	127
Jul	70.4	97*	58.1	92	84.2	82	135.4	133
Aug	58.1	104*	48.1	98	64.3	90	116.9	141
Sep	138.2	108*	128.1	103	110.4	96	159.6	146
Oct	125.1	111*	116.0	105	107.7	111	157.1	160
Nov	97.9	113*	92.8	107	98.1	113	148.2	162
Dec	122.7	117*	121.0	111	121.6	116	170.0	165
Jan 79	165.8*	123*	164.4	116	150.2	119	196.5	168
Feb	138.0*	130*	136.8	123	153.0	124	199.1	172
Mar	137.0*	136*	132.5	128	136.7	128	184.0	176
Apr	102.8*	141*	95.8	133	127.0	133	175.0	180
May	134.6*	147*	121.8	139	120.4	139	168.9	186
Jun	150.5*	154*	136.4	144	138.9	144	186.0	191
Jul	159.6*	156	140.5	145	123.1	145	171.4	192
Aug	143.5*	~~157*~~	125.1	~~144~~	129.2	~~145~~	177.0	~~192~~
Sep	188.7*	159(±3)*	184.0	146	156.5	147	202.3	---
Oct	188.2*	160(±8)*	178.2	147	171.7	148	216.4	---
Nov	185.0*	161(±11)*	176.5	148	182.9	149	226.8	---
Dec	182.2*	160(±15)*	157.6	147	151.0	148	197.2	---
Jan 80	162.2*	158(±19)*	146.7	146	153.6	147	199.6	---
Feb	159.3*	157(±20)*	131.0	145	148.7	146	195.1	---
Mar	---	155(±21)*	---	144	---	145	---	---
Apr	---	155(±25)*	---	144	---	145	---	---
May	---	154(±29)*	---	143	---	144	---	---
Jun	---	150(±33)*	---	140	---	141	---	---
Jul	---	146(±37)*	---	137	---	138	---	---
Aug	---	143(±39)*	---	134	---	135	---	---

*An asterisk denotes a value of the observed monthly mean, or the observed 12-month running mean, or the predicted 12-month average that is based only on preliminary observations of the Zurich relative sunspot number (Rz). Parentheses enclose the 90% confidence limits. Hatched boxes enclose the most recent smoothed values; boxes not shaded enclose predicted values. Ra is the new symbol for R_A.

OBSERVED AND PREDICTED SMOOTHED SUNSPOT NUMBERS



11
Feb 80


SUPERPOSITION OF CYCLES 18, 19, AND 20
SMOOTHED R_Z
EACH CYCLE'S BEGINNING MINIMUM IS SHIFTED TO COINCIDE WITH CYCLE 21
LEGEND
□ = CYCLE 18: BEGAN FEB. 1944
▲ = CYCLE 19: BEGAN APR. 1954
♦ = CYCLE 20: BEGAN OCT. 1964
MEAN OF CYCLES 8–20
0
20
40
60
80
100
120
140
160
180
200
JUNE 1974
JUNE 1975
JUNE 1976
JUNE 1977
JUNE 1978
JUNE 1979
JUNE 1980
JUNE 1981
JUNE 1982
JUNE 1983
JUNE 1984
JUNE 1985
JUNE 1986
JUNE 1987
JUNE 1988

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

MONTH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1976	15	13	12	13	12	12	13	14	14	13	13	15
1977	17	18	20	22	24	26	29	33	39	46	52	57
1978	61	64	70	77	83	89	97	104	108	111	113	117
1979	123	130	136	141	147	154	156	157	159	160	161*	160
									(3)	(8)	(11)	(15)
1980	158	157	155	155	154	150	146	143	141	140	138	137
	(19)	(20)	(21)	(25)	(29)	(33)	(37)	(39)	(40)	(41)	(43)	(45)
1981	137	137	134	131	129	126	125	125	124	123	120	117
	(47)	(47)	(45)	(44)	(44)	(44)	(43)	(41)	(40)	(40)	(39)	(37)
1982	113	110	107	105	103	100	96	91	87	82	79	75
	(35)	(34)	(34)	(32)	(30)	(28)	(27)	(25)	(24)	(21)	(20)	(20)
1983	71	68	66	65	62	60	58	56	54	53	52	51
	(20)	(20)	(21)	(21)	(21)	(22)	(23)	(25)	(27)	(29)	(30)	(30)
1984	50	48	45	41	38	37	36	35	33	32	30	29
	(31)	(30)	(29)	(29)	(30)	(31)	(32)	(31)	(31)	(29)	(28)	(27)
1985	27	27	26	26	25	24	23	22	21	20	19	19
	(27)	(27)	(26)	(26)	(26)	(25)	(23)	(23)	(22)	(23)	(24)	(24)
1986	18	18	17	16	14	13	12	12	11	11	11	11
	(25)	(24)	(24)	(23)	(22)	(21)	(20)	(19)	(17)	(16)	(15)	(13)
1987	11	12	13	14	15	16	17					
	(12)	(12)	(12)	(12)	(13)	(14)	(15)					

The table gives observed Zürich smoothed sunspot numbers for Cycle 21 up to the one calculated from the latest observed data, marked by a vertical bar. They are based on final Zürich numbers through 1978 and provisional Zürich numbers thereafter. Some of these data after the June 1976 value will change slightly when final data for 1979 are received. The numbers after the vertical bar are predictions by the McNish-Lincoln method (see *Explanation of Data Reports*, February 1978). Shown in parentheses are the corresponding absolute values of the 90% confidence interval, an indication of the uncertainty above and below the predicted number.

The McNish-Lincoln method is very sensitive to the identification of a minimum epoch. In SGD 390-401 issues, the Cycle 21 predictions were based on March 1976 as the minimum epoch. Latest studies, including one published by Waldmeier, show that June 1976 is the more appropriate epoch of minimum. Thus, we have adopted a June 1976 mimimum.

*Prediction of Sunspot Maximum -- The McNish-Lincoln prediction method is recommended for predictions up to only one year ahead. From that point, the predictions regress rapidly towards the mean value. Combining this McNish-Lincoln prediction of sunspot maximum with the Ohl method (as done by Sargent, see *Explanation of Data Reports*, February 1979) indicates that the most probable value for sunspot maximum is 160 ± 14.

Hα SOLAR FLARES

FEBRUARY 1980

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-PORT-ANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. HER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
PURP	11	0200	0225	0316	S13	E48	.741		4.7	76	1F		C				
PURP	1	0340	0340	0344	S12	E72	.947		6.6	4	SF		C				
PURP	1	0350	0355	0418	N12	E30	.571		3.4	28	2N		C	0355	679	8.3	
MITK	1	0406E		0429	N13	E33	.614		3.6	230	1F		C	0406	180	2.3	E
BUCA	1	0625		0910	S20	W26	.483		30.4	45	1N		C	0827	322	3.8	EG
RAMY	1	1429	1435	1435D	N13	E27	.543		3.6	60	SF	3	C		022		
RAMY	1	1451	15 3	1543	S12	E41	.655		4.7	52	SN	3	C		096		
RAMY	1	15 7	1522	1530	N13	E27	.543		3.7	23	SF	3	C		026		
RAMY	1	1555	1629	1641	N13	E27	.543		3.7	46	SF	3	C		030		
RAMY	1	1643	1645	1652	N11	E23	.477		3.4	9	SF	3	C		061		
RAMY	1	1647	1647	1655	S15	E45	.708		5.1	8	SF	3	C		030		
BIGB	1	1654	1700	1805	N05	E00	.191		1.7	71	SN	2	C	1700	140	1.4	
RAMY	1	1656	17 3	1734	N 5	E 0	.191		1.7	38	SN	3	C		083		
RAMY	1	1659	17 6	1722	S15	E45	.708		5.1	23	SF	3	C		027		
RAMY	1	1726	1732	1739	S12	E40	.642		4.7	13	SN	3	C		021		
BIGB	1	1729	1744	1835	S12	E39	.629		4.7	66	SB	1	C	1744	130	1.7	
RAMY	1	1741	1742	1759	S11	E39	.627		4.7	18	SB	3	C		045		D
RAMY	1	1741	1742	1746D	S15	E41	.659		4.8	50	SB	3	C		045		D
CATA	2	0710E	0710	0755D	N04	W11	.257		1.5	450	1B	1		0710	197	2.1	
PURP	2	0711	0715	0730	N04	W11	.257		1.5	19	1N		C				
PURP	2	0755	0804	0812	S17	E38	.625		5.2	17	SF		C				E
MONT	2	0832	0833	0836	N19	E47	.795		5.9	4	SF		C	0833	50		E
MONT	2	0836	0841	0844	N18	E01	.408		2.4	8	SB		C	0841	60		E
MONT	2	1026	1039	1110	N15	W11	.403		1.6	44	SF		C	1039	60		E
MONT	2	1109	1113	1128	S16	E34	.570		5.0	19	SN		C	1113	150		
RAMY	2	1241	1246	1256	S16	E33	.556		5.0	15	SB	3	C		048		D
RAMY	2	1247	1257	1313	N20	E25	.586		4.4	26	SF	3	C		039		
RAMY	2	1354	1355	14 0	N20	E26	.595		4.5	6	SF	3	C		026		
RAMY	2	1415	1416	1422	S13	E29	.491		4.8	7	SN	3	C		049		
RAMY	2	1512	1523	1528	S15	E29	.497		4.8	16	SN	3	C		060		
BIGB	2	1632E	1632U	1724	S16	E31	.529		5.0	52D	SB	1	P	1632	100	1.2	
BIGB	2	1753	1755	1811	N18	W04	.413		2.4	18	SB	2	C	1755	110	1.1	
HOLL	2	1914E	1915U	1935	S16	E30	.515		5.1	21D	SN	3	C		1 3		
HOLL	2	2035	2035	2043	N15	W 7	.378		2.3	8	SF	3	C		058		
PURP	3	0103	0104	0108	N04	W20	.381		1.5	5	SF		C				
PURP	3	0141	0141	0142	N17	W08	.414		2.5	1	SF		C				D
PURP	3	0349	0349	0349D	N17	W09	.419		2.5		SF		C				E
ATHN	3	1010E	1012	1102	N13	W10	.368		2.7	52D	2B	3	V	1012	721	7.5	
ATHN	3	1329E	1330	1342D	N18	E13	.459		4.5	130	1B	3	V	1330	262	2.8	
RAMY	3	1338	1340	1348D	S15	E17	.324		4.8	100	1B	3	C		341		
RAMY	3	1338	1359	1514	S15	E17	.324		4.8	96	1B	3	C		411		
HOLL	3	1428E	1431U	1512D	S15	E15	.295		4.7	44D	1N	2	C		214		
HOLL	3	1544	1547	1554	S16	E14	.291		4.7	10	SF	3	C		036		
HOLL	3	1558	1558	16 4	N 4	W32	.552		1.3	6	SF	3	C		023		
RAMY	4	1351	1358	14 0D	N14	W21	.485		3.0	9D	2N	3	C		4 4		
RAMY	4	1351	1358	1432	N15	W17	.455		3.3	41	2N	3	C		525		
HOLL	4	15 3	1510	1528	N19	W 3	.429		4.4	25	SF	3	C		1 9		
RAMY	4	15 4	15 6	1524	N19	W 3	.429		4.4	20	SF	3	C		097		
RAMY	4	1546	1549	1640	N10	W18	.410		3.3	54	SF	3	C		117		
HOLL	4	1548	16 3	1619	N13	W27	.545		2.6	31	SF	3	C		021		
RAMY	4	1610	1613	1622	S18	E 7	.235		5.2	12	SF	3	C		063		
HOLL	4	1612	1617	1622	N17	E12	.440		5.6	10	SF	3	C		022		
HOLL	4	1613	1615	1619	S16	E 5	.190		5.1	6	SF	3	C		036		
RAMY	4	17 5	1710	1719	N18	W45	.772		1.3	14	SF	3	C		037		
HOLL	4	17 8	1711	1718	N13	W48	.782		1.1	10	SF	3	C		024		
BIGB	4	1709	1722	2003	N19	E04	.431		5.0	174	1N	2	C	1722	300	3.1	
RAMY	4	17 9	1730	1936D	N19	E 1	.426		4.8	147D	1N	3	C		260		
RAMY	4	17 9	1715	1733	N18	E 9	.435		5.4	24	1B	3	C		270		
HOLL	4	1711	1733	1734D	N20	W 2	.443		4.6	230	1N	3	C		263		
HOLL	4	1711	1735	19 9	N20	W 2	.443		4.6	118	1N	3	C		254		
HOLL	4	1712	1713	1826	N18	E12	.453		5.6	74	1B	3	C		230		
HOLL	4	1729	1735	1753	S12	E26	.443		6.7	24	SF	3	C		046		
RAMY	4	1739	17+1	1758	N19	E11	.461		5.6	19	SN	3	C		044		
RAMY	4	1812	1812	1913	S13	E82	.987		10.9	61	SN	3	C		3 0		
HOLL	4	1859	19 9	1948	N16	W43	.743		1.8	49	SF	3	C		136		
BIGB	4	1900	1905	1944	N08	W42	.698		1.6	44	SN	2	C	1905	90	1.2	
RAMY	4	19 1	1915	1943D	N16	W49	.802		1.1	42D	SF	3	C		058		
RAMY	4	1911	1912	1941	N14	W24	.519		3.0	30	SF	3	C		042		

NOTE: Because of computer problems, some station data have zeroes missing in their times and positions. Please take this into account when reading the data.

Hα SOLAR FLARES

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONG.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
HOLL	4	1912	1917	1925	N16	W25	.548		2.9	13	SN	3	C		033		
HOLL	4	1942	1943	1950	S15	W51	.775		1.0	8	SF	3	C		044		
HOLL	4	2256	23 8	2345D	N26	E53	.872		8.9	49D	SN	3	C		088		
HOLL	4	2327	2328	2335	N18	E 8	.430		5.6	8	SN	3	C		075		
PURP	5	0203	0232	0248	S13	E84	.992		11.4	45	1F		C				
PALE	5	235E	237	255	S10	E76	.967		10.8	20D	SF	2	C		020		
PALE	5	237	242	3 0	N11	W36	.640		2.4	23	SF	2	C		033		
PURP	5	0747	0747	0747D	S16	W05	.189		4.9		1N		P				
ATHN	5	0748E	0750	0806	N17	E75	.977		11.0	18D	SB	2	V	0750	82	2.9	
MANI	5	0750E	0754U	0800D	S13	E79	.978		11.3	10D	SN	3	V		40	1.0	
ATHN	5	0959E	1003	1018	N23	E47	.814		8.9	19D	SN	2	V	1003	98	1.6	
CATA	5	1000	1010	1040	N28	E48	.844		9.0	40	1B	2		1010	225	4.3	
CATA	5	1245	1250	1255D	N28	E47	.837		9.1	10D	1B	2		1250	197	3.7	
HOLL	5	1727	1727	18 5	S17	W 9	.240		5.1	38	1B	3	C		3 4		
PALE	5	1740E	1740U	1814	S17	W10	.250		5.0	34D	1B	2	C		321		
HOLL	5	2041	2045	2057	S11	E69	.929		11.0	16	SB	2	C		063		
PALE	5	2044	2049	2255	S13	E73	.951		11.3	131	SB	2	C		030		
PALE	5	23 0	23 0	2310	S19	W11	.286		5.1	10	SF	3	C		043		D
HOLL	5	23 7	2313	2356	S14	E69	.928		11.1	49	SN	2	C		060		
PALE	5	2311	2331	2359	S13	E67	.915		11.0	48	SN	3	C		071		D
MONT	6	0913	0916	0939	S15	W15	.294		5.3	26	SN		C	0916	100		E
MONT	6	1020	1038	1213D	S17	W39	.637		3.5	113D	2N		C	1038	600		GS
CATA	6	1025	1115	1240	S18	W30	.522		4.2	135	2N	1		1115	787	9.5	
MONT	6	1058	1102	1111	S19	W17	.356		5.2	13	SF		C	1102	50		E
MONT	6	1153	1157	1213D	S15	W16	.308		5.3	20D	SF		C	1157	60		E
HOLL	6	16 5	16 7	1617	S12	E61	.869		11.2	12	SN	3	C		051		
HOLL	6	1622	1628	1640	S17	W19	.365		5.3	18	SN	3	C		045		
HOLL	6	1721	1750	1823	S12	E60	.861		11.2	62	1B	3	C		162		D
HOLL	6	2013	2013U	2017D	S12	E52	.783		10.7	4D	SB	3	C		047		
BIGB	6	2251	2253	2308	S11	W28	.470		4.9	17	SN	2	C	2253	100	1.2	
PALE	7	147E	148U	153D	S13	W30	.504		4.8	60	SF	2	C		063		D
PALE	7	3 3E	3 8	341	S18	W28	.495		5.0	38D	SN	2	C		139		D
ATHN	7	0708E	0710	0735	S18	W26	.468		5.3	27D	1B	3	V	0710	262	3.0	
ATHN	7	0720E	0730	0751	S12	E40	.641		10.3	31D	1B	3	V	0730	196	2.5	
ATHN	7	1006E	1007	1102	S16	W38	.621		4.6	56D	SB	3	V	1007	164	2.1	
RAMY	7	1448	1450	1453	N 8	E29	.535		9.8	5	SF	3	C		025		
RAMY	7	1455	1456	1514	S15	E48	.741		11.2	19	SN	3	C		035		
RAMY	7	1518	1518	1522	S13	E42	.667		10.8	4	SF	3	C		023		
RAMY	7	1526	1526	1533	S13	E42	.667		10.8	7	SN	3	C		038		
RAMY	7	1547	1547	1551	S15	W36	.593		5.0	4	SN	3	C		030		
RAMY	7	1553	1553	1730	N 2	W26	.458		5.7	97	SN	3	C		023		
RAMY	7	16 8	1612	1614	N10	W80	.989		1.7	6	SF	3	C		0 0		
RAMY	7	1611	1612	1616	S14	E47	.729		11.2	5	SN	3	C		042		
HOLL	7	1620	1620	1630	S12	E50	.762		11.4	10	SN	2	C		033		
RAMY	7	1643	1651	1657	S20	E69	.928		12.9	14	SF	3	C		012		
RAMY	7	1645	1647	17 7	S15	E47	.730		11.2	22	SB	3	C		037		D
HOLL	7	1646	1648	1657	S12	E49	.750		11.4	11	SN	3	C		021		
RAMY	7	1653	17 8	18 2	N15	W58	.877		3.4	69	2B	3	C		420		D
HOLL	7	1654	17 8	1816	N13	W59	.881		3.3	84	2B	3	C		378		
BIGB	7	1707	1709	1821	N15	E60	.892		12.2	74	1N	2	C	1709	420	5.0	
HOLL	7	1736	1738	1747	S 8	E41	.652		10.8	11	SN	3	C		037		
RAMY	7	1743	1744	1753	N 3	W26	.463		5.8	10	SN	3	C		047		
HOLL	7	1843	1848	1859	N10	W69	.944		2.6	16	SF	3	C		027		
HOLL	7	1846	1846	1851	S16	W36	.595		5.1	5	SN	3	C		024		
RAMY	7	19 1	19 6	1934	N 2	W29	.502		5.6	33	SB	3	C		189		D
BIGB	7	1903	1905	1931	N03	W28	.492		5.7	28	1N	2	C	1905	220	2.6	
HOLL	7	19 7E	19 7U	1931	N 2	W28	.488		5.7	24D	SB	3	C		090		
HOLL	7	1912	1919	1931	N 2	W28	.488		5.7	19	SF	3	C		033		
PALE	7	2243	2247	2248D	N 1	W31	.527		5.6	5D	1F	3	C		2 3		
PALE	8	015E		033	S 0	W31	.524		5.7	18D	SF	3	C		073		
PALE	8	112	116	119	S18	W34	.575		5.5	7	SF	3	C		021		
PALE	8	144	146	217	S14	E43	.681		11.3	33	SB	3	C		082		D
PURP	8	0144	0145	0224	S15	E45	.706		11.4	40	SB		C				
MANI	8	0145E	0145U	0155	S16	E41	.659		11.1	10D	SN	3	V		40	.6	F
PURP	8	0500	0501	0506	S13	W49	.751		4.5	6	1F		P				
PURP	8	0554	0556	0635	S14	E43	.681		11.5	41	1N		C				
PURP	8	0600	0601	0605	S17	W40	.649		5.3	5	1F		C				
MONT	8	0825	0837	0902	N03	W36	.604		5.7	37	SF		C	0837	50		E

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
MONT	8	0905	0912	0937	N13	W81	.992		2.3	32	1B		C	0912	250		
MONT	8	0906	0908	0911	N05	W62	.891		3.7	5	SF		C	0908	60		E
CATA	8	0915E	0915	0935D	N10	W90	1.000		1.6	20D	2B	1		0915	225		
MONT	8	1023	1025	1029	S14	E27	.463		10.5	6	SF		C	1025	50		E
MONT	8	1027	1032	1037	S14	E39	.630		11.4	10	SN		C	1032	150		
WEND	8	1035E		1103D	S14	E39	.630		11.4	28D	SN		C	1035	100	1.4	E
WEND	8	1035E		1103D	S15	W35	.579		5.8	28D	SN		C	1035	44	.6	
MONT	8	1135	1141	1158	N19	W81	.994		2.4	23	SN		C	1141	110		
MONT	8	1233	1234	1242	S15	E36	.592		11.2	9	SN		C	1234	80		E
MONT	8	1346	1351	1428	S15	E35	.579		11.2	42	SF		C	1351	50		E
RAMY	8	1349	1359	1417	S17	W41	.661		5.5	28	SN	3	C		025		
MONT	8	1401	1402	1428	S15	E36	.592		11.3	27	SN		C	1402	70		D
WEND	8	1412E		1422D	S14	W38	.617		5.7	10D	SN		C	1412	44	.7	E
WEND	8	1445	1502	1540	N03	W38	.631		5.8	55	SN		C	1502	69	.9	E
WEND	8	1446	1452	1504D	S14	E23	.404		10.3	18D	SN		C	1452	44	.5	E
RAMY	8	1457	15 3	1535	N 1	W39	.638		5.7	38	SN	3	C		099		
HOLL	8	1526E	1527U	1540	N 2	W36	.601		5.9	14D	SF	2	C		073		
HOLL	8	1533	1534	1540D	S13	E36	.588		11.3	7D	SF	2	C		026		
BIGB	8	1715	1723	1739	S16	E23	.414		10.4	24	1N	2	C	1723	250	2.8	
RAMY	8	1837E	1847U	19 4D	N 3	W48	.657		5.8	27D	SN	3	C		066		
PALE	8	1837	1848	19 0	S 0	W41	.662		5.7	23	SN	3	C		044		D
PALE	8	1848	1848	19 2	S13	E42	.667		11.9	14	SF	3	C		019		
PALE	8	2048	2049	2052	S16	E27	.471		10.9	4	SN	3	C		032		D
PALE	8	2321	2323	2342	N24	W 3	.509		8.7	21	SN	3	C		048		
PALE	9	114	122	131	S15	E37	.605		11.8	17	SN	3	C		156		D
MANI	9	0116E	0120	0135	S15	E37	.605		11.8	19D	SF	3	V		80	1.0	
PURP	9	0517	0518	0527	S14	W58	.843		4.9	10	1F		C				
PURP	9	0735	0745	0815	N27	W07	.562		8.8	40	1B		C				
PURP	9	0747	0750	0811	S17	W51	.776		5.5	24	1N		C				
MANI	9	0751E	0751U	0818	N26	W03	.540		9.1	19D	SN	2	V		90	1.1	F
MONT	9	0826E	0826	0844D	N26	W05	.543		9.0	18D	SN		C	0826	100		
WEND	9	0857	0901	0916	S18	E45	.711		12.7	19	SF		C	0901	31	.5	
WEND	9	1025	1032	1040	N19	W68	.949		4.3	15	SF		C	1032	28		
MONT	9	1150	1154	1222	S17	W60	.861		5.0	32	SN		C	1154	100		
WEND	9	1154		1232D	S18	W56	.826		5.3	38D	SN		C	1156	56	1.1	E
WEND	9	1306		1322D	S18	W58	.844		5.2	16D	SN		C	1308	38	.8	E
HOLL	9	16 3E	16 3U	1635	S17	W55	.816		5.5	32D	SF	3	C		065		
HOLL	9	17 3	1724	1747D	N24	W12	.540		8.8	44D	SF	3	C		021		
BIGB	9	1842	1855	1952	N25	W11	.549		9.0	70	SN	3	C	1855	100	1.1	
PALE	9	2335	2337	2340	S12	E 9	.181		10.7	5	SF	3	C		026		
PURP	10	0131	0133	0142	N27	W17	.607		8.8	11	SN		C				
PALE	10	132	133	141	N25	W19	.596		8.6	9	SF	3	C		027		
PURP	10	0137	0140	0153	N04	E90	1.000		16.8	16	1N		C				
PURP	10	0139	0140	0144	S16	W67	.914		5.0	5	SF		C				
PALE	10	236	239	244	S 1	W62	.884		5.5	8	SF	3	C		017		
CATA	10	0735	0745	0845	S11	W05	.115		9.9	70	SN	2		0745	56	.6	
PURP	10	0752	0753	0817	S09	W05	.096		10.0	25	SF		C				
CATA	10	1015	1023	1035	N12	W90	1.000		3.7	20	2N	2		1023	281		A
CATA	10	1045	1100	1105	N18	E90	1.001		17.2	20	1N	2		1100	56		
RAMY	10	1528	1538	1716	S18	E10	.259		11.4	108	2B	3	C		685		
BIGB	10	1538E	1538U	1843	S19	E10	.272		11.4	185D	2B	3	P	1538	520	4.4	
HOLL	10	1541E	1542U	16 6D	S11	E 1	.079		10.7	25D	1N	3	C		381		
HOLL	10	1652	1657	1917	N10	E76	.976		16.5	25	1B	4	C		0 0		
RAMY	10	2018	2028	2029D	N11	E73	.965		16.3	11D	SB	3	C		0 0		
HOLL	10	2021	2028	2029D	N13	E79	.987		16.8	8D	1B	3	C		0 0		
BIGB	10	2104	2110	2326	N28	W22	.651		9.2	142	1N	3	C	2110	230	2.6	
RAMY	10	21 6	2122	2135D	N27	W22	.640		9.2	29D	SN	3	C		127		
HOLL	10	21 6	2124	22 5	N26	W20	.615		9.4	59	SN	3	C		175		
PALE	10	21 7		21 9D	N25	W27	.657		8.9	2D	SN	1	C		0 0		
PALE	10	2329	2331	0 2	N11	E72	.960		16.4	33	SB	3	C		063		
PALE	11	019E	020	050	S11	W15	.266		9.9	31D	SF	2	C		020		
PURP	11	0025	0027	0108	S09	W14	.243		10.0	35	1N		C				
PALE	11	250E	251	349D	N10	E72	.959		16.5	59D	SF	2	C		0 0		
PURP	11	0444	0454	0512	N10	W24	.487		9.4	28	1F		C				
MANI	11	0720E	0724U	0728D	N09	E78	.983		17.2	8D	SN	2	V		40	1.8	
ATHN	11	0722E	0726	0746	N06	E71	.951		16.6	24D	1B	3	V	0726	131	6.6	
ATHN	11	1019E	1021	1051D	S18	W85	.993		5.1	32D	1B	3	V	1021	98	5.0	
ATHN	11	1034E	1035	1133D	N11	W30	.569		9.2	59D	SB	3	V	1035	131	1.5	

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
RAMY	11	1218	1220	1231	N26	W34	.724		9.0	13	SF	3	C		053		
RAMY	11	1424	1425	1441	N29	W40	.793		8.6	17	SF	3	C		020		
RAMY	11	15 3	15 5	1528	S11	W22	.377		10.0	25	SN	3	C		050		
HOLL	11	15 7	1522	1559	N10	W28	.537		9.5	52	SN	3	C		078		
HOLL	11	1613	1622	1629	N10	E66	.926		16.6	16	SN	3	C		017		
HOLL	11	1638	1643	17 3	N10	E66	.926		16.6	25	SB	3	C		077		
RAMY	11	1641	1643	1645D	N10	E62	.898		16.3	4D	SB	3	C		052		
HOLL	11	1641	1647	1655	N 9	W29	.543		9.5	14	SF	3	C		024		
HOLL	11	17 4	1730	18 3	N 9	W30	.555		9.5	59	SN	3	C		093		
BIGB	11	1706	1723	1820	N09	W30	.555		9.5	74	SN	3	C	1723	160	1.9	
HOLL	11	1830	1854	1911	N 9	W30	.555		9.5	41	SF	3	C		075		
PALE	11	1835E	1853U	1925	N 8	W30	.549		9.5	50D	1N	3	C		211		
PALE	11	19 2	19 3	1922	N10	E63	.906		16.5	20	SF	3	C		017		D
HOLL	11	1922	1931	1936	N 9	W31	.568		9.5	14	SN	3	C		055		
HOLL	11	1932	1934	1936	S17	W81	.983		5.7	4	SF	3	C		0 0		
RAMY	11	2032	2041	21 2	N10	W34	.612		9.3	30	SN	3	C		038		
RAMY	11	2037	2037	2055	N11	E61	.893		16.4	18	SB	3	C		198		
HOLL	11	2037	2038	2057	N13	E62	.904		16.5	20	1B	3	C		267		
PALE	11	21 1E	21 6	2128	N 8	W34	.601		9.3	27D	SF	3	C		1 0		
RAMY	11	21 3	21 7	2119	N 9	W32	.581		9.5	16	SN	3	C		040		
HOLL	11	2114	2115	2122	S17	W 9	.235		11.2	8	SF	3	C		038		
PALE	11	2120	2128	2153	N10	E62	.898		16.5	33	SF	3	C		056		
HOLL	11	2128	2129	2149	N16	E66	.934		16.8	21	SF	3	C		021		
BIGB	11	2139	2143	2149	N15	W90	1.000		5.2	10	1N	3	C	2143	70		
HOLL	11	2212	2213	2221	N16	E66	.934		16.9	9	SF	3	C		017		
HOLL	11	2324	2324	2333	N10	E65	.919		16.9	9	SF	3	C		031		
PALE	11	2329	2331	0 2	N11	E72	.960		17.4	33	SB	3	C		063		
MITK	11	2354	2404	2414	N10	W36	.636		9.3	20	1N		C	2404	210	2.7	E
PALE	12	132	137	153D	N13	E64	.917		16.9	21D	SF	3	C		035		
PURP	12	0338	0339	0349	S10	W19	.327		10.7	11	1N		C				
PURP	12	0557	0603	0624	N13	E60	.889		16.7	27	1B		C				
ATHN	12	0604E	0607	0630	N08	E58	.863		16.6	26D	SB	3	V	0607	49	.9	
ATHN	12	0738E	0738	0758D	N09	W39	.668		9.4	20D	1B	3	V	0738	136	2.6	
PURP	12	0812	0812	0814	N13	E65	.924		17.2	2	1F		P				
MONT	12	0835	0841	0959	S07	W27	.451		10.3	84	1N		C	0841	250		
MANI	12	845E	845U	0900	S 8	W25	.420		10.5	15D	SN	2	C		150		
MANI	12	0845E	0845U	0901D	S08	W25	.420		10.5	16D	SN	2	V		150	1.7	F
MONT	12	1053	1107	1116	N13	W40	.699		9.5	23	SF		C	1107	60		E
MONT	12	1131	1133	1138	S19	W15	.327		11.4	7	SF		C	1133	50		E
MONT	12	1207	1219	1236	S18	W33	.561		10.0	29	SN		C	1219	100		
RAMY	12	1227E	1337	1352D	S13	W23	.399		10.8	85D	SB	3	C		122		
RAMY	12	1227E	1344	1626	N 9	W42	.703		9.4	239D	1B	3	C		193		
RAMY	12	1227E	1337	15 6	N13	E23	.502		14.2	159D	SB	3	C		122		
MONT	12	1319	1323	1341	N10	E59	.875		17.0	22	SF		C	1323	60		E
RAMY	12	1427	1435	1453	S18	E70	.933		17.9	26	SN	3	C		084		
MONT	12	1433	1434	1440	S17	E79	.977		18.5	7	SB		C	1434	50		D
HOLL	12	1450	1517	1533	N10	W43	.719		9.4	43	SN	3	C		030		
MONT	12	1450	1453	1500D	S17	W39	.635		9.7	10D	SF		C	1453	60		E
RAMY	12	1545	1550	16 8	S18	E70	.933		17.9	23	SN	3	C		048		
HOLL	12	1546	1552	16 0	S15	E76	.965		18.4	14	SF	3	C		0 0		
HOLL	12	1615	1619	1621	S11	W32	.528		10.3	6	SF	3	C		024		
HOLL	12	1642	1742	1831	N 8	W45	.734		9.3	109	SB	3	C		140		
RAMY	12	1644	1713	1731D	N 9	W46	.748		9.2	47D	SB	3	C		116		
BIGB	12	1712	1716	1736	N08	W43	.711		9.5	24	SN	3	C	1716	140	2.0	
HOLL	12	1720	1727	18 5	S 7	W33	.541		10.2	45	SN	3	C		1 0		
BIGB	12	1723	1726	1823	S07	W34	.556		10.2	60	SN	3	C	1726	80	1.0	
BIGB	12	1741	1744	1810	N08	W44	.723		9.4	29	SN	3	C	1744	90	1.3	
HOLL	12	1941	20 8	2017	N13	E48	.784		16.4	36	SN	3	C		046		
HOLL	12	2015	2017	2020	N 9	W45	.737		9.5	5	SN	3	C		024		
HOLL	12	2044	2049	2123	N 8	W46	.745		9.4	39	1B	3	C		187		
HOLL	12	2124	2144	2148D	N 9	W46	.748		9.4	24D	1B	3	C		166		
HOLL	12	2124	2246	2344	N 9	W47	.759		9.4	140	SB	3	C		091		
MITK	13	0142	0145	0152	S07	W38	.612		10.2	10	1N		C	0145	180	2.4	E
MITK	13	0304	0307	0329	S21	E84	.990		19.4	25	1N		C	0307	130		E
MITK	13	0417	0419	0427	N14	E51	.816		17.0	10	SB		C	0419			E
MONT	13	0826	0828	0840	S13	W39	.628		10.4	14	SF		C	0828	60		E
MONT	13	0905	0907	0923	S13	W39	.628		10.5	18	SF		C	0907	80		E
WEND	13	0940	0959	1039	S07	W38	.612		10.6	59	1N		C	0959	162	2.2	G
MONT	13	0948	1006	1041	S05	W40	.640		10.4	53	1N		C	1006	250		
WEND	13	1018	1020	1028	N13	W57	.866		9.2	10	SN		C	1020	44	.8	D

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OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	NOAA/TH PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
WEND	13	1024		1041	S17	E70	.933		18.7	17	SN		C	1028	16		
WEND	13	1045	1052	1058	S11	W40	.639		10.4	13	SN		C	1052	62	.9	
MONT	13	1050	1052	1056	S11	W43	.678		10.2	6	SN		C	1052	118		H
WEND	13	1052		12510	S21	W70	.933		8.2	1190	1N		C	1106	100		
MONT	13	1055	1105	1113D	S23	E71	.939		18.8	180	1N		C	1105	250		
CATA	13	1100E	1100	1118D	S22	E72	.945		18.9	100	SN	1		1100	56		
CATA	13	1140E	1155	1200D	S16	E65	.908		18.4	20D	2N	1		1155	337	8.0	
WEND	13	1224		12560	S07	W46	.715		18.1	32D	SN		C	1230	41	.6	
RAMY	13	1226	1318	14 0	S18	E73	.950		19.0	94	SN	3	C		123		
RAMY	13	1256	1258	13 5	N21	E43	.772		16.8	9	SN	3	C		078		
WEND	13	1258	1306	1316	N11	E48	.689		16.5	18	SN		C	1306	38	.5	E
RAMY	13	13 1	13 7	1318	S14	W42	.668		10.4	17	SN	3	C		036		
RAMY	13	1357	14 6	1412	S13	W42	.667		10.4	15	SN	3	C		047		
RAMY	13	1417	1430	15 3	S14	W40	.642		10.6	46	SN	3	C		038		
RAMY	13	1426	1426	1442	S19	E66	.907		18.6	16	SN	3	C		092		
RAMY	13	1436	1437	1451	N25	E53	.871		17.6	15	SN	3	C		020		
RAMY	13	1552	1636	1657	N26	W64	.940		8.9	65	SN	3	C		051		
RAMY	13	1632	1633	1640	S18	E61	.869		18.3	8	SF	3	C		017		
RAMY	13	1827	1831	1836	N 9	W58	.865		9.4	9	SF	3	C		018		
RAMY	13	2032	2034	2037D	S17	E53	.796		17.8	5D	1B	3	C		223		D
RAMY	13	2053	2053	21 3	S13	W41	.654		10.8	10	SF	3	C		022		
PURP	14	0608	0610	0633	S04	W55	.817		10.1	25	1N		C				
CATA	14	0955	1000	1015	N08	W70	.947		9.2	20	1N	2		1000	112		
PURP	15	0100	0100	0110	S21	W02	.247		14.9	10	SN		C				
PURP	15	0100		0102	S12	E50	.761		18.8	2	SF		P				E
MITK	15	0247	0248	0255	S18	E47	.733		18.6	8	SF		C	0248			E
PURP	15	0247	0249	0303	S18	E46	.721		18.6	16	2N		C	0249	453	6.4	E
PURP	15	0247	0248	0258	S21	W03	.250		14.9	3	1N		C				H
PALE	15	249E		257	S22	W 2	.264		15.0	8D	SF	3	C		065		
PALE	15	249E		252D	S17	E43	.684		18.3	30	1N	3	C		213		
PALE	15	249E		346	S15	E36	.591		17.8	57D	1N	3	C		213		
PURP	15	0318	0324	0331	S18	E40	.650		18.1	13	2N		C	0324	491	6.4	H
MITK	15	0318E		0338D	S17	E36	.596		17.8	20D	1N		C	0320	250	3.2	E
RAMY	15	1216	1218	1223	S18	E37	.612		18.3	7	SF	3	C		023		
WEND	15	1359		14070	S18	E45	.710		19.0	8D	SN		C	1403	12	.2	
RAMY	15	1535	1536	1544	S10	W69	.929		10.5	9	SF	3	C		017		
RAMY	15	1652	17 0	1715	S18	E34	.573		18.3	23	SN	3	C		056		
RAMY	15	1656	1657	17 1	N 9	W84	.996		9.4	5	SF	3	C		015		
RAMY	15	19 4	19 4	1949	S19	E40	.652		18.8	45	SN	3	C		090		
PALE	15	2019E		21290	S17	E32	.543		18.2	70D	SN	1	C		142		
RAMY	15	21 7	2116	21300	S13	W65	.900		11.0	23D	SN	3	C		071		
MITK	15	2346	2348	2405	S18	E26	.465		17.9	19	SN		C	2348			E
PALE	16	3 5E	3 8U	3140	S17	E35	.583		18.8	9D	SN	2	C		052		D
ATHN	16	1030	1038	1058	S21	E26	.482		18.4	28	SN	3	V	1038	66	.8	
HOLL	16	1528	1541	16 6	S18	E24	.437		18.4	46	SF	3	C		047		
HOLL	16	1645	1645	1657	S18	E24	.437		18.5	12	SN	3	C		028		
RAMY	16	1751	18 2	1829	N16	W32	.630		14.3	38	SF	3	C		018		
HOLL	16	2010	2010	2020	N12	E 1	.324		16.9	10	SF	3	C		024		
HOLL	16	2211	2212	2219	N13	E 0	.340		16.9	8	SF	3	C		034		
BIGB	17	0009	0013	0015	S29	E90	.998		23.8	6	SN	3	P	0013	40		
ATHN	17	0843	0845	0858	N08	W05	.271		17.0	15	SB	3	V	0845	114	1.2	
MANI	17	0845E	0845U	0858	N08	W05	.271		17.0	13D	SN	3	V		80	.9	F
CATA	17	0950E	1000	10050	N13	W44	.743		14.1	15D	SB	2		1000	56	.9	
RAMY	17	14 6	14 8	1410	N17	W43	.752		14.4	4	SF	3	C		028		
RAMY	17	1538	1540	16 3	S17	E 6	.202		18.1	25	SN	3	C		045		
RAMY	17	1849	1858	19 5	S13	E67	.914		22.8	16	SN	3	C		015		
PALE	17	1857E	1859U	19 6D	S13	E67	.914		22.8	9D	SF	1	C		020		
RAMY	17	1920	1926	1933	S13	E67	.914		22.8	13	SN	3	C		038		
MONT	18	1018	1025	1041	N09	W20	.431		16.9	23	SN		C	1025	80		
MONT	18	1129	1133	1144	S10	E64	.893		23.3	15	SF		C	1133	50		E
HOLL	18	1632	1636	17 6	S18	W 1	.193		18.6	34	SF	3	C		075		
HOLL	18	1652	17 3	1714	N 6	W27	.498		16.7	22	SF	3	C		054		
HOLL	18	17 4	17 5	1712	S 8	E67	.916		23.7	8	SF	3	C		020		
MANI	19	0745E	0747U	0755D	S10	E57	.833		23.6	100	1N	3	V		100	1.8	F
CATA	19	0750	0755	0810	N08	E52	.809		23.2	20	1B	3		0755	253	4.2	

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OBSERV-ATORY	OBSERVED UT				LOCATION				CMP. DAY	DURA-TION MIN.	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION				COND.	TYPE	TIME UT	MEAS. AREA Mil. of Disk	CORR. AREA Sq. Deg.	
WEND	19	0819		0840	S09	E54	.804		23.4	21	SF		C	0826	38	.7	
WEND	19	0931	0935	0941	S08	E48	.738		23.0	10	SN		C	0935	20	.3	D
RAMY	19	1426	1429	1439	N25	W25	.645		17.7	13	SF	3	C		072		
WEND	19	1443	1450	1514	S21	E55	.818		23.7	31	SN		C	1450	38	.7	
WEND	19	1445	1449	1456	S26	E56	.834		23.8	11	SF		C	1449	44	.9	
WEND	19	1504	1504	1510	S08	E43	.677		22.9	6	SN		C	1504	31	.4	
WEND	19	1508	1510	1517	N05	W39	.652		16.7	9	SF		C	1510	31	.4	
WEND	19	1527	1529	1546	S09	E46	.714		23.1	19	SF		C	1529	25	.4	
RAMY	19	2027	2041	2114	S11	E49	.749		23.5	47	1N	3	C		247		
RAMY	19	2032	2038	2041	N23	W34	.704		17.3	9	SF	3	C		1 3		
PALE	19	2254	2255	2311	S 8	E42	.664		23.1	17	SN	3	C		045		
PALE	20	0 2	0 2	021	S 9	E40	.638		23.0	19	SF	3	C		021		
PALE	20	323	343	3570	S10	E44	.689		23.4	34D	SF	3	C		118		
MANI	20	0724E	0726	0735	N10	E52	.814		24.2	11D	SN	3	V		30	.5	F
WEND	20	0830	0835	0917	S08	E33	.541		22.8	47	SN		C	0835	100	1.2	
MONT	20	0833E	0833	0917	S08	E35	.569		23.0	44D	SN		C	0833	70		
MONT	20	0928	0929	0933	S08	E35	.569		23.0	5	SF		C	0929	50		E
WEND	20	0929	0930	0949	S09	E35	.569		23.0	20	SN		C	0930	62	.8	E
WEND	20	1012	1016	1025	N12	E51	.611		24.3	13	SF		C	1016	50	.8	
WEND	20	1035		1126	N11	E51	.808		24.3	51	SF		C	1039	81	1.4	E
WEND	20	1119	1122	1144	S17	W35	.582		17.8	25	SN		C	1122	66	.9	
MONT	20	1120	1122	1134	S16	W35	.579		17.8	14	SN		C	1122	70		
CATA	20	1120E	1120	1120D	S17	W35	.582		17.8		1N	2		1120	197	2.5	
RAMY	20	1130	1131	1142	S17	W36	.595		17.8	12	SF	3	C		048		
RAMY	20	1247	1248	1251	N 7	W53	.816		16.6	4	SF	3	C		017		
WEND	20	1321		1435	S07	E30	.497		22.8	74	SF		C	1326	34	.4	
WEND	20	1448	1500	1519	S09	E35	.569		23.2	31	SF		C	1500	38	.5	E
RAMY	20	1751	1753	1821	S 9	E31	.511		23.1	30	1N	3	C		193		
HOLL	20	1753	1758	1817	S 8	E32	.526		23.1	24	SN	3	C		166		
RAMY	20	2016	2018	2053	S 8	E28	.466		22.9	37	1B	3	C		210		D
MANI	21	3 2E	323	340D	S32	E11	.454		22.0	38D	SN	3	C		080		
PALE	21	321	322	349	S11	E29	.483		23.3	28	1B	3	C		236		D
PURP	21	0321	0322	0345	S12	E29	.485		23.3	24	1B		C				
MANI	21	0322E	0323	0340D	S11	E30	.498		23.4	18D	SN	3	V		80	1.0	F
WEND	21	1133	1141	1151	S12	E78	.974		27.3	18	1N		C	1141	140		
WEND	21	1206	1231	1256	S12	E73	.951		27.0	50	1N		C	1231	88		
WEND	21	1337	1342	1402	S19	W55	.816		17.4	25	SN		C	1342	81	1.5	
RAMY	21	1337	1346	14 7	S18	W50	.765		17.8	30	SF	3	C		055		
WEND	21	1446	1455	1515	N07	W64	.909		16.8	29	SF		C	1455	50	1.2	E
WEND	21	1450E		1515D	S11	E74	.956		27.2	25D	SF		C	1455	31		
RAMY	21	1712	1713	1725	S10	E18	.310		23.1	13	SN	3	C		088		
PURP	22	0208	0221	0242	S12	E69	.928		27.3	34	1B		C				
PALE	22	225E	225U	232	S10	E70	.935		27.4	7D	SF	3	C		024		
MONT	22	1002	1004	1012	S16	W61	.868		17.8	10	SF		C	1004	50		E
WEND	22	1004E		1034D	S19	W56	.825		18.2	30D	SN		C	1007	63	1.2	
WEND	22	1141E		1220D	S19	W58	.843		18.1	39D	SN		C	1156	63	1.3	
WEND	22	1235E		1324D	S19	W72	.944		17.1	49D	SF		C	1306	63		
WEND	22	1426	1430	1438	S10	E65	.901		27.5	12	SN		C	1430	56		
BIGB	22	1859	1911	1923	N11	E90	1.000		29.5	24	1B	3	C	1911	60		
PALE	23	053	1 2U	110	S 9	E56	.823		27.2	17	SN	3	C		050		
PALE	23	142	145U	2 1	S 9	E56	.823		27.3	19	SF	3	C		044		
WEND	23	0818	0822	0830	N11	E07	.332		23.9	12	SN		C	0822	31	.3	
WEND	24	1154E		1223D	S25	E78	.971		1.3	29D	SN		C	1158	38		
RAMY	24	1316	1316	1332	S24	E79	.975		1.5	16	SF	3	C		0 0		
WEND	24	1319E		1335D	S25	E77	.967		1.3	16D	SN		C	1323	38		
WEND	24	1524E		1555D	N10	W06	.311		24.2	31D	SF		C	1537	31	.3	
RAMY	24	1756	18 6	1812	S23	E76	.963		1.4	16	SF	3	C		0 0		
MITK	25	0455	0458	0507	N19	E75	.979		1.8	12	1F		C	0458	170		E
WEND	25	0837E		0921D	N10	W16	.397		24.2	44D	SF		C	0848	88	1.0	E
WEND	25	1103	1107	1122	S13	E71	.939		1.8	19	SN		C	1107	44		
WEND	25	1501E		1610D	S25	E63	.887		1.4	69D	SF		C	1510	63		E
WEND	25	1507E		1610D	S13	E70	.933		1.9	63D	SF		C	1530	44		E
RAMY	25	1523	1533	1539	S12	E70	.934		1.9	16	SF	3	C		024		
BIGB	25	1545E	1557	1649	N12	E90	1.000		3.4	64D	1N	3	P	1557	80		
HOLL	25	1550E	1555U	1618	N18	E90	1.001		3.4	28D	SB	3	C		0 0		

Hα SOLAR FLARES

FEBRUARY 1980

OBSERVATORY	OBSERVED UT				LOCATION					DURATION — MIN.	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MEMATH PLAGE REGION	CMP. DAY			COND.	TYPE	TIME — UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
RAMY	25	1620	1622	1633	S12	E69	.928		1.9	13	SB	3	C		058		
RAMY	25	1620E	1625U	1645	N15	E90	1.001		3.4	25D	SN	3	C		0 0		
HOLL	25	1621	1622	1633	S11	E69	.928		1.9	12	SN	3	C		053		
RAMY	25	1636	1643	1651	S24	E65	.901		1.6	15	SF	3	C		018		
RAMY	25	1736	1746	1751	S23	E65	.901		1.6	15	SF	3	C		032		
HOLL	25	1743	1747	1755	S23	E65	.901		1.6	12	SF	3	C		030		
RAMY	25	19 2	19 5	1922	S24	E64	.894		1.6	20	SN	3	C		038		
RAMY	25	1950	1955	2011	S11	E73	.951		2.3	21	SF	3	C		0 0		
HOLL	25	1955	1955	20 8	S11	E71	.940		2.2	13	SF	3	C		030		
BIGB	25	2000	2005	2032	N10	E90	1.000		3.6	32	1B	3	C	2005	80		
HOLL	25	20 3E	20 5	2020	N13	E90	1.000		3.6	17D	SB	3	C		0 0		
BIGB	25	2104	2154	2311	S09	E90	1.000		3.6	127	1B	3	C	2154	70		
PALE	26	153	157	211	S 8	E63	.886		1.8	18	SF	3	C		027		
PALE	26	321	322	331	S 8	E62	.878		1.8	10	SN	3	C		098		
MONT	26	0838	0845	0857	S15	E65	.899		2.2	19	SN		C	0845	70		D
WEND	26	0918E		0943D	S24	E54	.812		1.4	25D	SN		C	0928	106	2.0	
MONT	26	0922	0927	0933	S25	E55	.823		1.5	11	1N		C	0927	250		
WEND	26	0939		0958	S15	E61	.868		2.0	19	SN		C	0943	44	1.0	
MONT	26	0940	0942	0945D	S15	E65	.899		2.3	5D	SF		C	0942	50		D
WEND	26	1015E		1031D	S24	E54	.812		1.5	16D	SF		C	1019	37	.7	E
MONT	26	1016	1020	1029	S15	E65	.899		2.3	13	SF		C	1020	60		E
WEND	26	1031	1036	1044	S23	E55	.820		1.6	13	SF		C	1036	44	.9	
MONT	26	1032	1034	1038	S23	E58	.846		1.8	6	SN		C	1034	70		D
MONT	26	1150	1153	1158	S15	E64	.892		2.3	8	SB		C	1153	100		
WEND	26	1151	1156	1201	S15	E60	.859		2.0	10	SN		C	1156	75	1.6	
MONT	26	1227	1229	1237	S25	E54	.814		1.6	10	SF		C	1229	50		E
WEND	26	1452	1458	1506	S10	E10	.179		27.4	14	SN		C	1458	37	.4	
HOLL	26	1625	1627	1634	S12	E60	.859		2.2	9	SN	3	C		084		
HOLL	26	1818	1818	1824	S12	E59	.851		2.2	6	SF	3	C		035		
PALE	27	225	230	240	S13	E 2	.107		27.3	15	SF	3	C		053		
PALE	27	327	346	355D	S12	E55	.813		2.3	28D	1B	3	C		189		D
MANI	27	0328E	0330	0425D	S12	E55	.813		2.3	57D	SN	3	V		80	1.2	EU
MANI	27	0328E	0343	0425D	S12	E55	.813		2.3	57D	1N	3	V		150	2.2	
MANI	27	0423E	0423U	0443D	S25	E45	.725		1.6	20D	SN	3	V		90	1.4	F
MANI	27	0814E	0814U	0826D	S12	W07	.146		26.8	12D	SF	3	V		20	.2	
WEND	27	0814	0819	0841	S13	W07	.157		26.8	27	SF		C	0819	63	.7	
CATA	27	0815	0820	0845	S14	W07	.168		26.8	30	SN	2		0820	56	.6	
MONT	27	0923	0937	0943	N15	E39	.782		1.3	20	SF		C	0937	50		E
CATA	27	0935	0935	0945	N16	E37	.686		1.2	10	SN	2		0935	84	1.2	
MONT	27	1143	1145	1152	S13	W01	.103		27.4	9	SN		C	1145	70		E
WEND	27	1144	1147	1153	S14	W01	.120		27.4	9	SN		C	1147	66	.7	
WEND	27	1429	1438	1449	S08	W07	.122		27.1	20	SN		C	1438	25	.3	
WEND	27	1442	1446	1530	S05	W57	.836		23.3	48	SN		C	1446	19	.4	D
WEND	27	1444	1450	1511	S13	W06	.144		27.2	27	SN		C	1450	94	1.8	E
WEND	27	1501	1509	1524	S32	W42	.722		24.5	23	SF		C	1509	56	.9	
HOLL	27	1930	1932	1938	N24	E83	.938		5.0	8	SF	3	C		0 0		
PURP	28	0149	0156	0200	N26	W31	.705		25.8	11	SF		C				
MANI	28	0151E	0151U	0200D	N26	W31	.705		25.8	9D	SN	3	V		60	.9	
CATA	28	1105	1110	1150	N19	E60	.904		4.0	45	1N	2		1110	84	2.0	
CATA	28	1205	1205	1255	S23	E28	.518		1.6	50	1B	2		1205	365	4.4	
WEND	28	1207	1208	1239D	S25	E30	.555		1.8	32D	1B		C	1208	398	5.1	
MONT	28	1224E	1224	1244	S23	E29	.530		1.7	20D	SN		C	1224	200		
CATA	29	0835	0840	0850D	S23	E17	.386		1.6	15D	SN	2		0840	169	1.9	
CATA	29	0840	0840	0850D	S18	E43	.685		3.6	10D	SN	2		0840	84	1.2	
CATA	29	1020E	1020	1030	S11	W78	.974		23.6	10D	SN	2		1020	45		
RAMY	29	14 1E	14 4	1413	S28	W49	.774		25.9	12D	SF	3	C		024		
HOLL	29	1441	1445	1513	S22	E14	.342		1.7	32	1B	3	C		429		
RAMY	29	1442	1444	1535	S25	E14	.379		1.7	53	2B	3	C		529		
RAMY	29	1637	1639	1647	S27	W51	.790		25.9	10	SN	3	C		021		
HOLL	29	1655	17 1	1713	N 1	E40	.653		3.7	18	SF	3	C		037		
RAMY	29	1711	1712	1756	S27	W52	.799		25.8	45	SN	3	C		026		
RAMY	29	19 3	19 5	19 6	S27	W51	.790		26.0	3	SN	3	C		016		
PALE	29	20 5	2010	2021	N15	E39	.702		3.8	16	SF	3	C		029		
HOLL	29	20 7	20 9	2028	N 1	E38	.626		3.7	21	SF	3	C		035		
PALE	29	20 8	20 9	2028	N 3	E33	.566		3.3	20	SF	3	C		030		

Hα SOLAR FLARES

FEBRUARY 1980

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DAY	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
BIGB	29	2013	2016	2030	S19	E40	.651		3.8	17	SN	2	C	2016	90	1.2	
PALE	29	2013	2016	2029	S15	E34	.562		3.4	16	1N	3	C		255		D
HOLL	29	2014	2017	2026	S16	E34	.565		3.4	12	SN	3	C		053		
HOLL	29	2015	2017	2030	S16	E46	.717		4.3	15	SF	3	C		039		
PALE	29	2017	2056	2138	S28	W53	.610		25.9	81	SF	3	C		066		D
HOLL	29	2049	2059	2123	S29	W54	.821		25.8	34	SF	3	C		026		

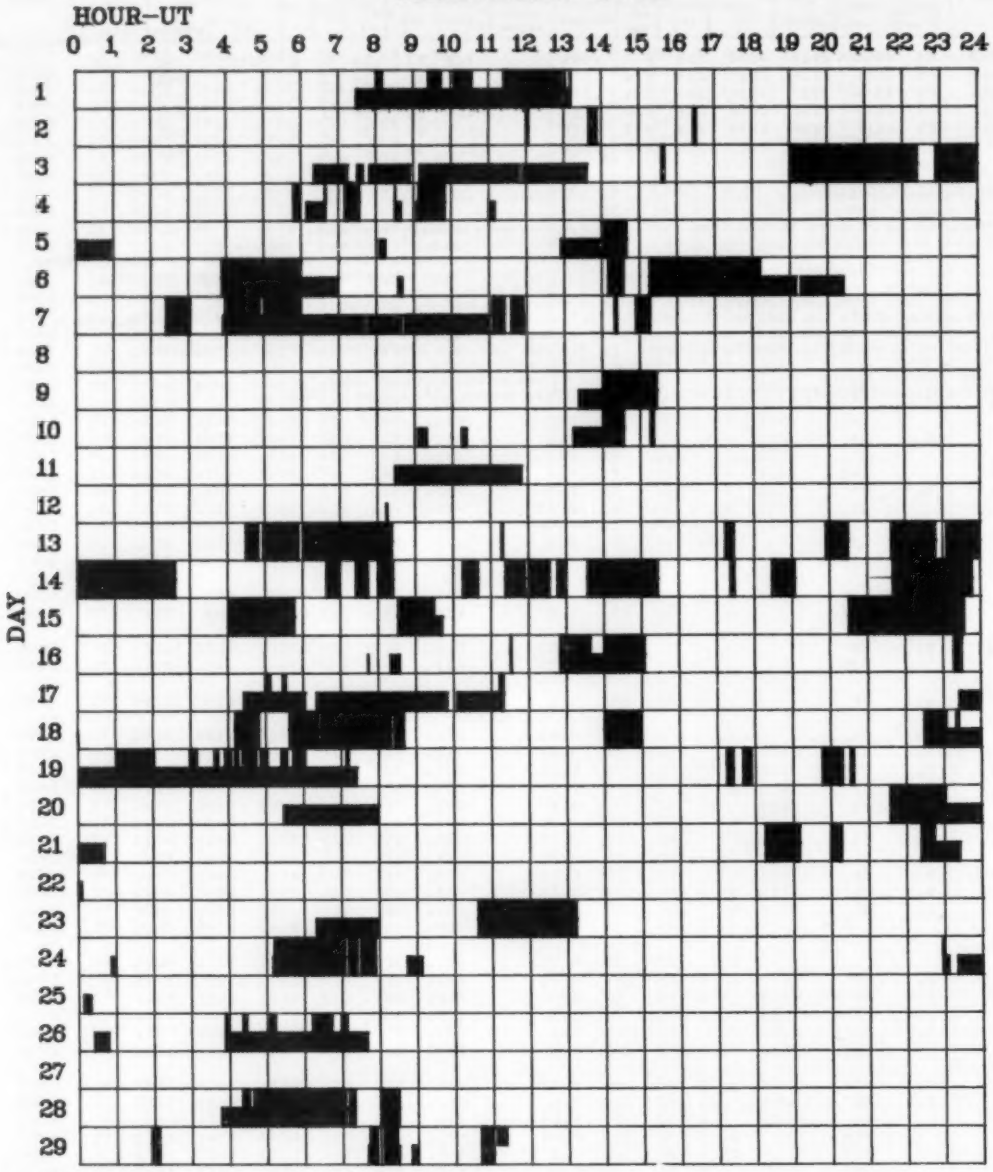
"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = Ho visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

FEBRUARY 1980



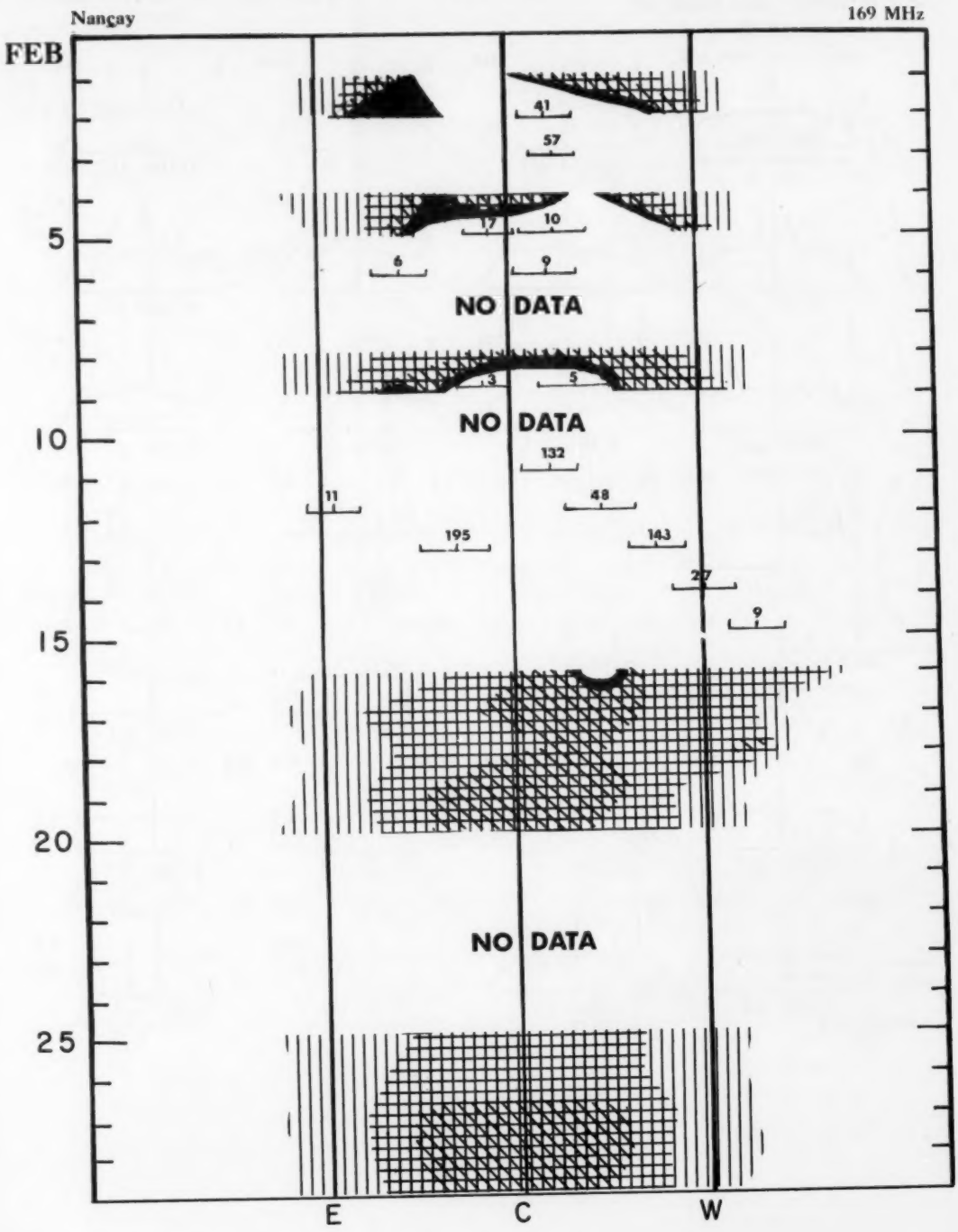
Observatories included in total patrol:

Athens	Bucharest	Holloman	Mitaka	Palehua	Ramey
Big Bear	Catania	Manila	Monte Mario	Purple Mt	Wendelstein

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

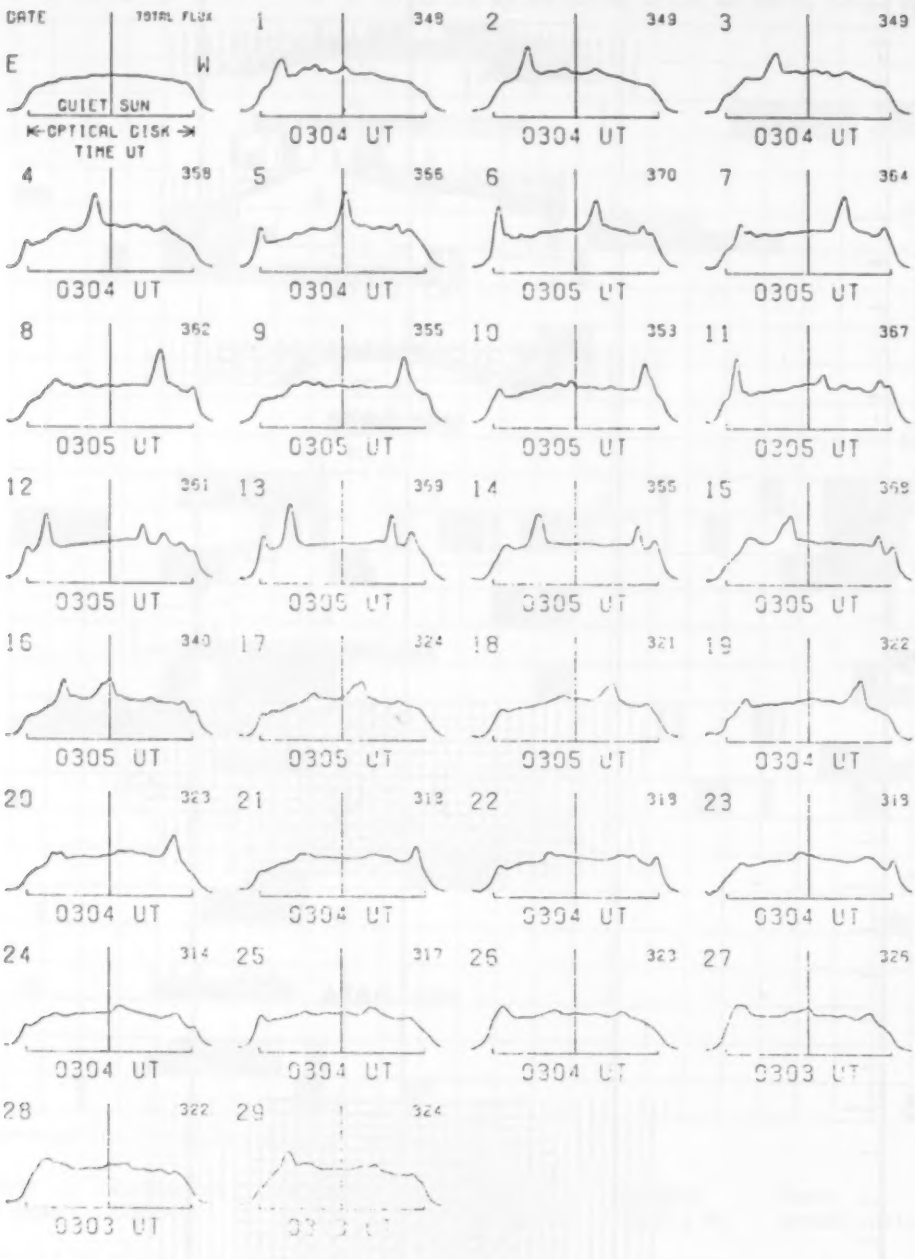
FEBRUARY 1980



EAST-WEST SOLAR SCANS
FEBRUARY 1980

TOYOKAWA, JAPAN

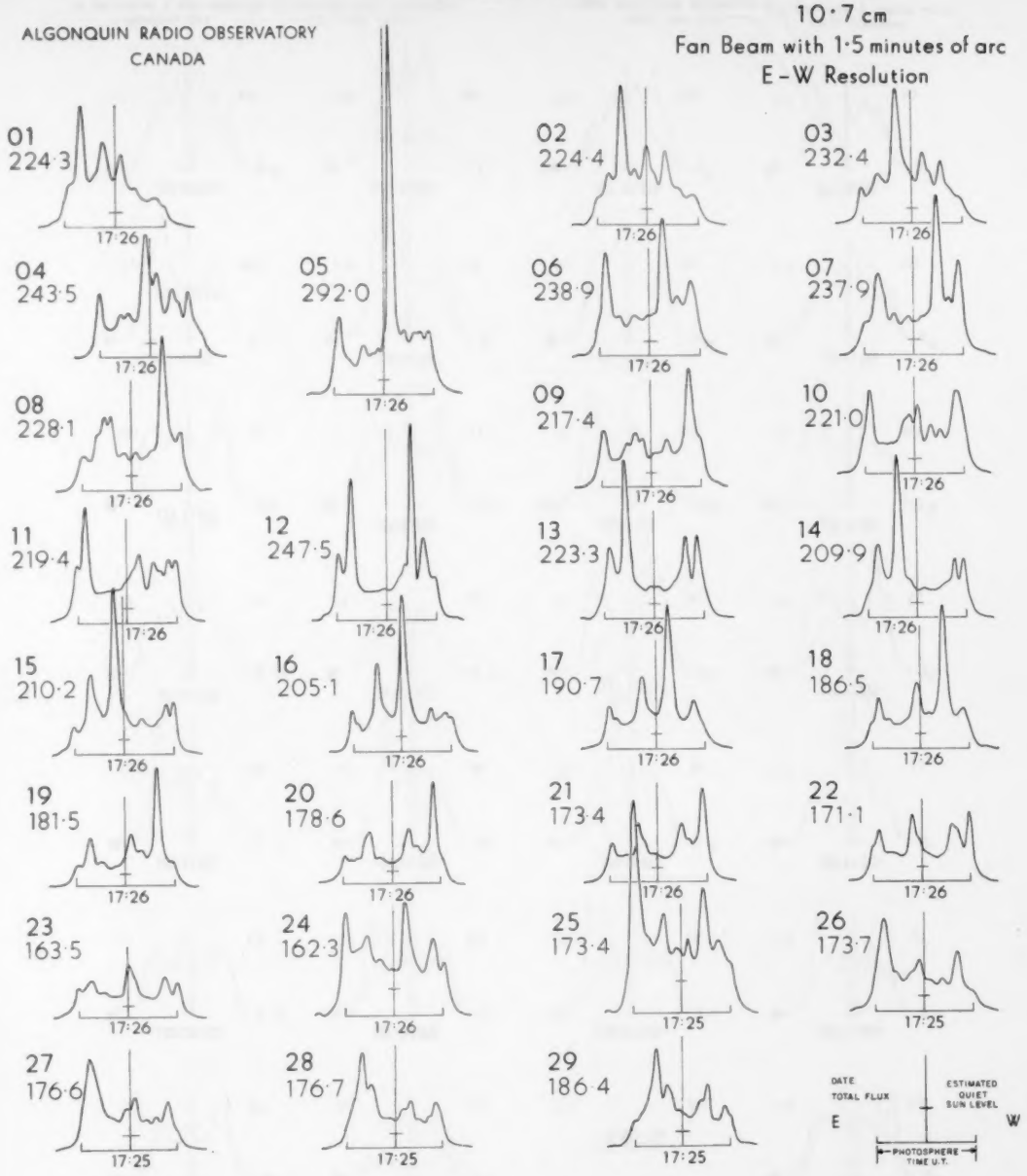
3 CM
FAN BEAM WITH 4.1 MINUTES OF ARC



EAST-WEST SOLAR SCANS
FEBRUARY 1980

ALGONQUIN RADIO OBSERVATORY
CANADA

10·7 cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

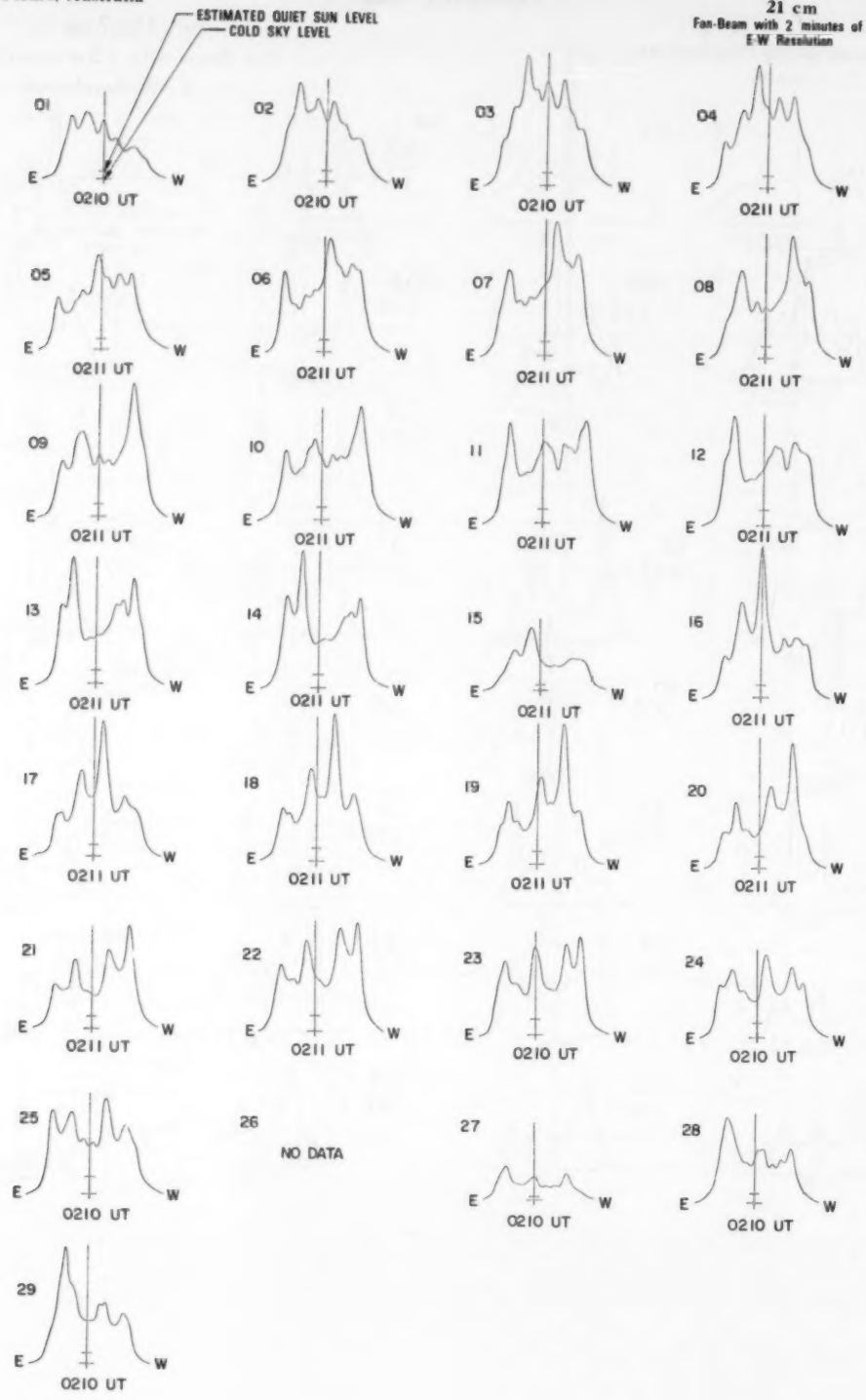


EAST-WEST SOLAR SCANS

FEBRUARY 1980

Fleurs, Australia

21 cm
Fan-Beam with 2 minutes of arc
E-W Resolution

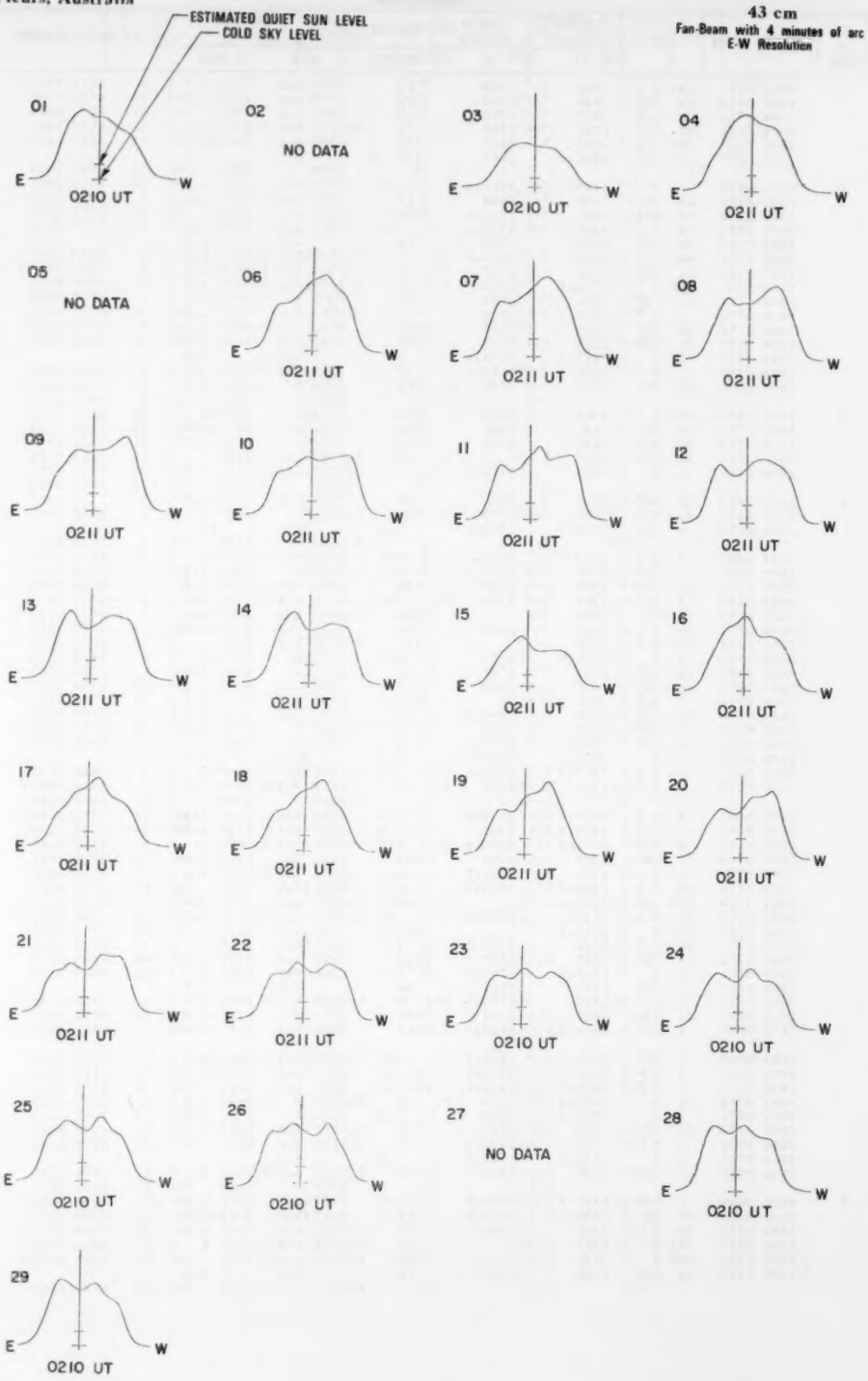


EAST-WEST SOLAR SCANS

FEBRUARY 1980

Fleurs, Australia

43 cm
Fan-Beam with 4 minutes of arc
E-W Resolution



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

FEBRUARY 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
1	2800	OTTA	240 R	1440	1505	25	6.6	3.3		
	2800	OTTA	20 GRF	1630	1642	20	3.6	1.2		
	2800	OTTA	21 GRF	1653	1715	110	7.6			
	2800	OTTA	22 GRF	1741	1748	20	5.4	2.7		
	2695	PENT	260 FAL	2000	2035	35	-3.2	-1.6		
	2695	PENT	20 GRF	2045	2215	135 D	6			
2	2695	MANI	1 S	0312.4	0312.6	.3	11.2	3.7		
	2800	OTTA	20 GRF	1435	1440	17	3.6	1.3		
	2800	OTTA	21 GRF	1511	1514.5	23	4	2		
	2800	OTTA	8 S	1512	1512.4	.8	2.2	1.1		
	2800	OTTA	21 GRF	1542	1625	60	3.6	1.8		
	2800	OTTA	45 C	1622	1629.5	4	22.6	5.6		
	2800	OTTA	21 GRF	1702	1707	65	3.8	1.9		
	2800	OTTA	46F C	1751.5	1759	18	20.2	3.6		
	2800	OTTA	20 GRF	1954	1955	25	2	1.4		
	2800	OTTA	2 S/F	2032.2	2033	1.8	9.8	4.9		
	2800	OTTA	20 GRF	2100	2108	25	4.2	2.1		
	2800	OTTA	21 GRF	2126	2136	25	2.8	1.4		
	2800	OTTA	1 S	2127.8	2128.2	1	9.6	4.8		
	2800	OTTA	1 S	2144	2144.5	2	2.2	1.1		
	2695	PENT	20 GRF	2200	2230	70	5	3.6		
3	2800	OTTA	46F C	1318	1339	69	488	98		
	2800	OTTA	30 PBI	1427	1427	300	38	11.8		
	2800	OTTA	20 GRF	1505	1510	15	4	1.8		
	2800	OTTA	20 GRF	1547		30	4.6			
	2800	OTTA	8 S	1640	1640.3	.6	6.8	3.4		
4	2800	OTTA	20 GRF	1535	1603	85	4.8	2.8		
	2800	OTTA	21 GRF	1705	1755	245	17	8.5		
	2800	OTTA	4 S/F	1712.9	1713.2	1.2	48	16		
5	8800	MANI	3 S	0703.4	0704.4	2.6	38.7	10.2		
	2695	MANI	4 S/F	0737	0739.6	14.5	29	9.7		
	2800	OTTA	21 GRF	1300	1344	110	5.2	2.6		
	2800	OTTA	1 S	1319	1320	2.5	8.8	2.9		
	2800	OTTA	27A RF	1540		155	2.6	2.4		
	2800	OTTA	24 R	1540	1550	18	2.6	1.3		
	2800	OTTA	24P R	1550		135	2.6			
	2800	OTTA	3 S	1724.5	1727	6.5	58	29		
	2800	OTTA	29 PBI	1731	1731	38	14	3.4		
	2800	OTTA	26 FAL	1605	1615	18	-2.6	-1.3		
	2800	OTTA	2 S/F	2030		1.2	2	1.7		
	2800	OTTA	22 GRF	2040	2041.5	57	4.8	2.4		
	2695	PENT	2 S/F	2209.5	2210	1.5	7	2.3		
	2695	PENT	4 S/F	2311.5	2313.1	2	11			
	2695	MANI	3 S	2313.2	2313.4	1.3	21.8	7.3		
	8800	MANI	3 S	2313.2	2313.4	.6	36.1	12		
	2695	PENT	1 S	2318	2319	2	3.2	1.8		
6	2695	MANI	3 S	0015.3	0015.8	4.7	8.4	2.8		
	2695	MANI	4 S/F	0334.8	0335	1.8	15.1	5.1		
	2695	MANI	4 S/F	0432.2	0433.8	2.5	20.3	6.8		
	2800	OTTA	21 GRF	1320	1445	145	8.4	5.6		
	2800	OTTA	1 S	1334	1334.5	1.2	6.2	5.2		
	2800	OTTA	48 F	1336.2	1337.2	1.1	17.4			
	2800	OTTA	27A -F	1719.3		148.7	4.2	3.8		
	2800	OTTA	24 R	1719.3	1719.8	.5	4.2	2.1		
	2800	OTTA	24P R	1719.8		115.2	4.2			
	2800	OTTA	48 F	1720	1720.3	9	15.4			
	2800	OTTA	29 PBI	1729	1729	15	2.6	1.3		
	2800	OTTA	1 S	1748.2	1749.4	1.8	8.2	4		
	2800	OTTA	21 GRF	1748	1807	32	3.6	1.8		
	2800	OTTA	1 S	1752	1753.5	8	8.8	4.4		
	2800	OTTA	26 FAL	1915	1940	25	-4.2	-2.1		
	2695	PENT	2 S/F	2011.9	2012.5	2	4.8	2.4		
7	8800	MANI	4 S/F	0434.7	0436.7	4.6	115.9	38.6		
	8800	MANI	3 S	0702.2	0702.4	.5	38.6	12.9		
	2800	OTTA	1 S	1439.5	1440.1	1.5	1.4	.7		
	2800	OTTA	1 S	1453.8	1454	4	3	1.2		
	2800	OTTA	1 S	1524.3	1525	1.5	5	1.6		
	2800	OTTA	23 GRF	1655	1720	145	8.8	4.4		
	2800	OTTA	1 S	1731	1731.3	1	2.4			
	2800	OTTA	8 S	1735.4	1735.5	.5	2.4			
	2695	PENT	20 GRF	2135	2200	70	4.2	2.1		
8	8800	MANI	4 S/F	0904.8	0906.4	19.2	281.5	93.8		
	2695	MANI	47 GB	0905.1	0906.6	18.9	599.4	199.8		
	2800	OTTA	24 R	1325	1400	35	4.8	2.4		
	2800	OTTA	27A RF	1325		195	4.8	4		
	2800	OTTA	24P R	1400		130	4.8			
	2800	OTTA	21 GRF	1450	1505	60	8.2	3.9		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
FEBRUARY 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
					UT	UT	MINUTES	PEAK	MEAN		
	2800	OTTA	1	S	1457	1500	6	7.2	3.6		
	2800	OTTA	26	FAL	1610	1640	30	-4.8	-2.4		
	2800	OTTA	21	GRF	1710	1720	50	4.8	2.4		
	2800	OTTA	8	S	1741.8	1741.8	.3	2.8			
	2800	OTTA	20	GRF	2005	2100	115	3.8	2.2		
9	2800	OTTA	20	GRF	1420	1423	50 D	5			
	2800	OTTA	21	GRF	1523	1559	167	9.8	4.6		
	2800	OTTA	1	S	1550.5	1551	2	7.8	3.8		
	2800	OTTA	20	GRF	1850	1905	35	3.4	1.7		
	2695	PENT	1	S	2335	2335.3	1	9.4	3.4		
10	8800	MANI	3	S	0429.7	0431.3	2.9	91.4	30.5		
	2695	MANI	1	S	0438.5	0431.4	2.7	9.3	3.1		
	2695	MANI	3	S	0447.7	0448.1	3.9	83	27.7		
	2800	OTTA	8	S	1321.7	1322	.6	2.4	1.2		
	2800	OTTA	21	GRF	1515	1555	335	17.6	8.4		
	2800	OTTA	4	S/F	1528	1536	18	90	30		
	2800	OTTA	20	GRF	2105	2125	55	5.8	3.4		
11	8800	MANI	4	S/F	0019.6	0021	3.4	100.7	33.6		
	2800	OTTA	21	GRF	1420	1516	130 D	8.4			
	2800	OTTA	2	S/F	1502	1505	4.5	3.4			
	2800	OTTA	20	GRF	1700	1715	30	3.4	1.7		
	2800	OTTA	20	GRF	1735	1800	55	3	1.5		
	2800	OTTA	20	GRF	1917	1940	48	3	1.5		
	2695	PENT	8	S	2009.2	2009.5	.5	3.8	1.9		
	2800	OTTA	4	S/F	2036.5	2037.6	2.5	196	49		
	2800	OTTA	31A	ABS	2039	2105	55	-3.8			
	2800	OTTA	1	S	2125	2127	7	7.2	2.4		
	8800	MANI	3	S	2251	2251.8	1.4	159.3	53.1		
12	8800	MANI	4	S/F	0839	0841.9	6	265.6	88.5		
	2800	OTTA	1	S	1432.5	1433	5	3.2	1.1		
	2800	OTTA	21	GRF	1605	1612	30	4.6	2.3		
	2800	OTTA	2	S/F	1609	1610	3	9.2	4.4		
	2800	OTTA	1	S	1612.7	1613	1.5	9.2	4.6		
	2800	OTTA	1	S	1642	1644.3	5	2.4	1		
	2800	OTTA	21	GRF	1710	1728	70	7.4	3.7		
	2800	OTTA	3	S	1711	1712.7	3	10.4	4.8		
	2800	OTTA	4	S/F	1722	1724	6	60	28		
	2800	OTTA	2	S/F	1741	1742	3	7.8	2.6		
	2800	OTTA	260	FAL	1821	1851	30	-3.8	-1.9		
	2800	OTTA	20	GRF	1910	1945	65	4.6	2.3		
	2800	OTTA	1	S	2043	2045	3	3.2	1.5		
	2800	OTTA	29	PBI	2046	2046	25	2.4	1.9		
	2695	PENT	1	S	2156	2157	2	5.8	2.9		
13	2695	MANI	1	S	0416.7	0417.1	1.3	9.7	3.2		
	8800	MANI	3	S	0416.8	0417	1.5	50.1	16.7		
	2800	OTTA	3	S	1425	1425.7	2	10.2	5		
	2800	OTTA	29	PBI	1427	1427	23	3.2	1.8		
	2800	OTTA	21	GRF	1515	1610	65	3.2	2		
	2800	OTTA	1	S	1558.2	1558.5	1.5	2.2	1.1		
	2800	OTTA	20	GRF	1720	1726	56	3.6	1.6		
	2800	OTTA	1	S	1927.9	1928	1	9.2	2.4		
	2800	OTTA	20	GRF	1945	2003	45	2.8	1.6		
	2800	OTTA	4	S/F	2031	2034.3	4.5	27.6	13.8		
	2800	OTTA	29	PBI	2035.5	2035.5	35	11.6	3.8		
	2800	OTTA	260	FAL	2100	2115	15	-4	-2		
	2695	PENT	1	S	2140	2144	10	4	1.8		
	2695	PENT	260	FAL	2200	2225	25	-3.2	-1.6		
	2695	PENT	260	FAL	2250	2325	35	-4	-2		
14	8800	MANI	3	S	0028.5	0029.3	1.5	274	91.3		
	2800	OTTA	20	GRF	1640	1730	80	3.6	2.6		
	2800	OTTA	22	GRF	1850	1950	120	3.2	2		
15	2800	OTTA	8	S	1328.9	1328.9	.1	4.4			
	2800	OTTA	20	GRF	1500	1700	180	7.2	3.6		
	2800	OTTA	21	GRF	1900	1930	230	6.4	3.2		
	2800	OTTA	8	S	2046.2	2046.5	.8	3.4	1.7		
	2800	OTTA	21	GRF	2102	2120	43	8.6			
	2800	OTTA	2	S/F	2103	2104.3	4	5.6	2.6		
	2800	OTTA	4	S/F	2110	2113.5	6	19	7.2		
16	2800	OTTA	3	S	1441.5	1442.3	4	11.4	3.6		
	2800	OTTA	22	GRF	1640	1750	85	3.6			
	2800	OTTA	260	FAL	1820	1900	40	-4.4	-2.2		
	2800	OTTA	20	GRF	1935	1950	30	2.4	1.2		
	2695	PENT	20	GRF	2200	2205	12	5	2.5		
	2695	PENT	3	S	2224.3	2224.6	3	31.8	15		
	2695	PENT	29	PBI	2227.3	2227.3	12	6.2	3		
17	2800	OTTA	20	GRF	1336	1337.5	25	4	1.8		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

FEBRUARY 1980

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
	2800	OTTA	20 GRF	1435	1550	205	6.4	3.4		
18	2800	OTTA	20 GRF	1455	1500	25	2.6	1.3		
	2800	OTTA	22 GRF	1625	1636	75	3.8	2		
	2800	OTTA	20 GRF	2010	2045	90	4	2		
19	2800	OTTA	21 GRF	1950	1910.5	35	3.6	1.6		
	2800	OTTA	1 S	1909.5	1910	1.5	5.2	2.4		
	2800	OTTA	20 GRF	2005	2046	160	6.6	3.3		
20	2800	OTTA	21 GRF	1420	1505	145	3.6	2.4		
	2800	OTTA	20 GRF	1603	1607	15	2	1		
	2800	OTTA	24 R	1741	1748	7	3.4	1.4		
	2800	OTTA	27A RF	1741		339	3.4	3.3		
	2800	OTTA	24P R	1748		317	3.4			
	2800	OTTA	3 S	1749	1753	11	11.4	5.7		
	2800	OTTA	29 PBI	1800	1800	60	4.4	1.5		
	2800	OTTA	4 S/F	2016	2017.6	2.8	17.4	6.5		
	2800	OTTA	29 PBI	2018.6	2018.6	34	5	2.5		
	2800	OTTA	20 GRF	2130	2132	11	6	2		
	2695	PENT	3 S	2253	2254.5	4	17.4	6.6		
	2695	PENT	29 PBI	2257	2257	7	5	2.4		
	2695	PENT	26 FAL	2305	2320	15	-3.4	-1.7		
21	2800	OTTA	20 GRF	1439	1449	30	4.8	1.8		
	2800	OTTA	20 GRF	1525	1545	60	2.2	1.5		
	2800	OTTA	4 S/F	1812.6	1814.1	5.2	18	9		
	2800	OTTA	29 PBI	1818	1818	25	3.6	1.4		
22	2800	OTTA	22 GRF	1858	1904	16	6	3		
	2695	PENT	260 FAL	2300	2320	20	-3.4	-1.7		
23	2800	OTTA	20 GRF	1627	1810	150	2.2	1.1		
24	2800	OTTA	20 GRF	1540	1710	125	3	1.8		
	2800	OTTA	1 S	1800	1807	10	2	1.2		
25	2800	OTTA	24 R	1350	1410	20	3.2	1.6		
	2800	OTTA	27 RF	1350		105	3.2	2.7		
	2800	OTTA	24P R	1410		73	3.2			
	2800	OTTA	26 FAL	1523	1535	12	-3.2	-1.6		
	2800	OTTA	240 R	1540	1555	15	3.2	1.6		
	2800	OTTA	4 S/F	1621.2	1621.7	4	66	6.6		
	2800	OTTA	240 R	1645	1703	18	5	2.6		
	2800	OTTA	21 GRF	1705	1735	135	4.4	3.4		
	2800	OTTA	8 S	1722	1722	.1	4			
	2800	OTTA	1 S	1944.5	1945	3	4	1.9		
	2800	OTTA	21 GRF	1944	2028	130	4.6	2.6		
	2806	OTTA	1 S	2201	2202	2	3.4	1.7		
26	2800	OTTA	4 S/F	1449	1449.9	2	40	6.6		
	2800	OTTA	8 S	1625	1625.2	.5	3.6	1.8		
	2800	OTTA	21 GRF	1705	1810	240	12.2			
	2800	OTTA	4 S/F	1743	1749.5	17	19.2	7		
	2800	OTTA	4 S/F	1858	1900.5	9	14.4	6		
	2800	OTTA	29 PBI	1907	1907	50	4.4	2.2		
27	2695	MANI	1 S	0343.3	0345.5	5.4	8.4	2.8		
	8800	MANI	4 S/F	0347.9	0400.7	23.8	90.8	36.2		
	2695	MANI	4 S/F	0352.6	0401	22.4	112	37.3		
	2800	OTTA	1 S	1342.5	1343	1	2.2	1.4		
	2806	OTTA	22 GRF	1420	1500	120 D	5.6			
	2806	OTTA	260 FAL	1905	1935	30	-3	-1.5		
28	2800	OTTA	1 S	1353	1353.5	1	2.6	1.8		
	2800	OTTA	22 GRF	1530	1600	140	3.2	1.8		
	2695	PENT	20 GRF	2120	2200	130	6.6	3.3		
29	2800	OTTA	23 GRF	1420	1520	260 D	8.8			
	2800	OTTA	20 GRF	1440	1444	15	4.6	2		
	2800	OTTA	21 GRF	2000	2016	48	4.6	2.3		
	2800	OTTA	1 S	2006	2007	4	2.8	1.4		
	2695	PENT	8 S	2013	2013	.1	10.2			

Observatories:

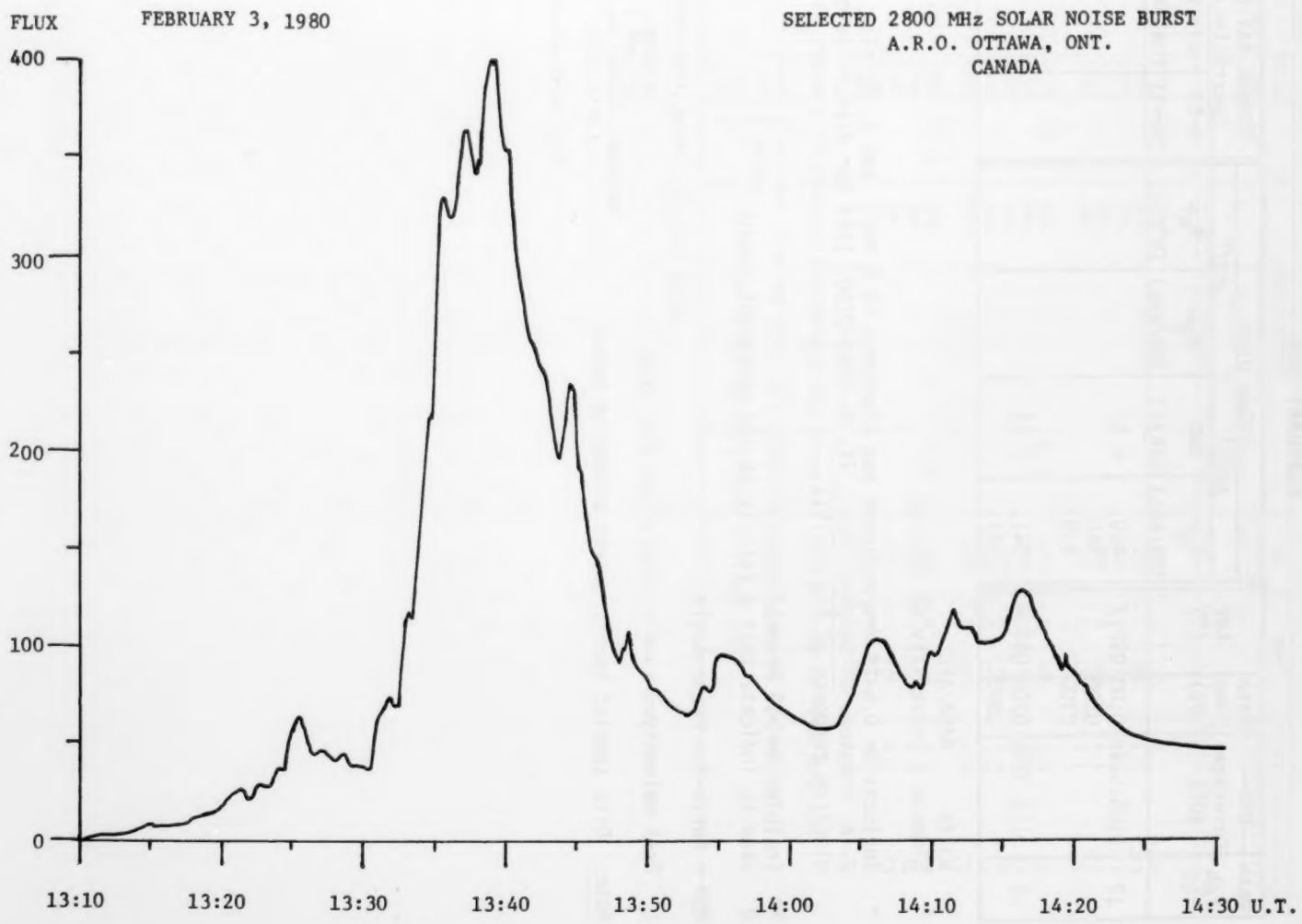
BERN = Berne BOUL = Boulder MANI = Manila OTTA = Ottawa ARO PENT = Penticton SGMR = Sagamore Hill

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

NOTE: U.S. Air Weather Service RSTN data still not available at this time. Some computer problems are still being worked on at NGSDC. Because the problems are relatively minor, we are hopeful that they will be solved shortly. We ask for your patience in the interim.

SELECTED SOLAR NOISE BURSTS



31
Feb 80

PIONEER VII

FEBRUARY 1980

Date Feb '80	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND				COSMIC RAY PROTONS[3] (particles/sec)		
				AMES[1]		MIT[2]				
				U_{H^+} (km/sec)	TAU (days)	U_{H^+} (km/sec)	N_{H^+} (H^+/cc)	6-13 (Mev*)	13-175 (Mev**)	>175 (Mev)
12	0105-0248	0100	092.7	440.	6.58					
		0200		440.						
		0300		440.						
19	0146-0256	0200	094.8	341.	6.54					
		0300		341.						

[1] Wolfe NASA/ARC
[2] Simpson - University of Chicago

* Includes He 0.6-13 Mev/nucleons and electrons ∿0.5 Mev - see J. Retzler and J. A. Simpson, J. Geophys. Res., 74, 9, 2149-2160, 1969 for discussion of the electron response of Pioneer VII.

** Includes He >13 Mev/nucleons.
Q Used to indicate that a rate is at its quiescent level.

ESP = Earth-Sun Probe Angle.

† Peak velocity.

Note: Data sampled hourly unless otherwise noted.

PIONEER IX

FEBRUARY 1980

Date Feb '80	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND[1]				IP B-FIELD[2]	IMF[3]		COSMIC RAY PROTONS[4] (particles/sec)	
				U_{H^+} (km/sec)	N_{H^+} (H^+/cc)	T_{H^+} ($\times 10^{5}$°K)	TAU (days)	400 Hz (mv)	|B| (γ)	φ (°)	>13.9 Mev	>40 Mev
1	1004-1328	1000	148.7	390.			11.5	0.178	7.6	130.	4.1	0.78
		1100		363.				.152	8.1	164.	4.1	.73
		1200		376.				.206	8.0	172.	4.1	.71
		1300		390.				.292	7.5	089.	4.1	.71
		1400		390.				.195	7.5	133.	4.1	.81
3	0146-0544	0200	148.5	468.			11.4	.274	6.9	142.	3.9	.75
		0300		468.				.206	6.7	138.	3.9	.73
		0400		468.				.282	6.8	133.	4.0	.74
		0500		430.				.282	5.5	112.	3.9	.77
		0600		430.				.198	5.9	108.	4.0	.73
16	1836-2243	1900	147.9	350.			11.3	.205	3.5	056.	4.1	.69
		2000		350.				.328	1.9	046.	4.0	.74
		2100		350.				.25	5.0	074.	4.2	.73
		2200		350.				.152	8.4	071.	4.2	.80
		2300		350.				.243	8.2	119.	4.2	.71

NOTE: February '80 witnessed considerable Deep Space Net (DSN) activity on PN-06 thru -09:

PN-06 1 pass-data link too noisy (s/c within 5 degrees of Superior Conjunction)
-07 2 passes
-08 2 " - data link in engineering (format C) format only.
-09 3 "

*Data sampled hourly unless otherwise noted.

[1] Wolfe - NASA/ARC
[2] Scarf - TRW, Inc.
[3] Sonett and Colburn - NASA/ARC
[4] Webber - Univ. of N.H.

Note: Data sampled hourly unless otherwise noted.

ESP = Earth-Sun Probe Angle.

PIONEER XII

FEBRUARY 1980

DATE Feb '80	TIME (UT)	ESV (°)	V_{H^+} (Km/sec)	N_{H^+} (H^+/CC)	T_{H^+} ($\times 10^6$°K)
1	0309	085.	311.	2.9	0.018
	1243		348.	14.6	.022
	1519		359.	12.6	.035
2	1459		470.	9.4	.281
3	1538		393.	5.9	.119
4	1555		391.	8.6	.094
5	1533		325.	17.3	.043
6	1239		325.	30.8	.036
7	2103		254.	41.	.03
8	1309		280.	25.3	.043
9	0123		421.	17.1	----
10	1326		307.	21.3	.026
11	1528		275.	34.2	.022
12	0109		272.	----	.011
13	1644		428.	20.3	.077
14	2243		410.	21.8	.143
15	1200	076.7	485.	41.4	.073
16	2011		370.	----	.03
17	2040		302.	34.2	.022
18	1529		---	----	----
19	1235		323.	18.4	.042
20	1302		279.	42.5	.052
21	2258		374.	9.8	.238
22	1835		355.	9.8	.087
23	2331		284.	21.	.015
24	1528		287.	31.1	----
25	1930		305.	31.7	----
26	1810		335.	27.8	.05
27	0525		341.	17.2	.067
28	2325		371.	15.2	.084
29	1815		426.	8.1	.126

SOLAR WIND

Interplanetary Scintillations

FEBRUARY 1980

DATE	DOY	UT HR	VMID KM/S	ERR	VPK KM/S	ERR	RATING 1-4	SOURCE	ELONG DEG	LAT DEG	DIST AU	DLON DEG	LAG DAY	ROTATION NUMBER
800201	32	12	403	46	536	17	2	3C273	126	-6	1.20	12	1.82	1691.07
	32	13	364	13	431	83	3	3C298	102	-2	1.10	15	1.63	1691.06
800203	34	1	467	13	414	27	2	3C48	82	1	1.00	-15	-1.18	1691.26
	38	4	489	21	513	22	2	3C144	126	-6	1.20	-12	-0.17	1691.38
	38	6	447	26	388	29	2	3C161	132	-13	1.22	-9	0.23	1691.35
800204	35	1	342	17	319	12	3	3C48	81	1	1.00	-15	-1.20	1691.24
800206	37	1	234	66	246	61	2	3C48	79	1	0.99	-16	-1.36	1691.23
	37	11	567	14	575	14	2	3C273	131	-6	1.22	11	1.49	1691.31
	37	13	516	56	523	74	2	3C298	106	-2	1.12	14	1.47	1691.30
800207	38	1	526	13	574	15	3	3C48	78	1	0.98	-14	-1.19	1691.42
	38	22	501	30	346	18	2	3C459	34	11	0.56	-54	-5.76	1691.61
800208	39	1	642	109	526	87	2	3C48	77	1	0.98	-15	-1.23	1691.48
	39	5	566	50	548	50	2	3C161	131	-13	1.22	-8	0.05	1691.43
800210	41	0	469	39	433	18	2	3C48	75	1	0.97	-14	-1.24	1691.52
	41	13	364	52	496	19	2	3C298	110	-2	1.14	15	1.78	1691.38
800213	44	0	430	15	403	14	2	3C48	72	1	0.95	-16	-1.45	1691.62
800214	45	1	419	13	385	12	3	3C48	71	1	0.95	-16	-1.49	1691.66
	45	5	318	26	330	44	2	3C161	126	-13	1.20	-9	0.44	1691.54
	45	22	314	65	314	19	2	3C459	27	15	0.45	-60	-7.82	1691.46
800215	46	0	492	94	420	29	2	3C48	70	2	0.94	-17	-1.58	1691.72
	46	3	379	9	411	10	2	3C147	117	0	1.17	-10	0.01	1691.62
	46	4	370	11	370	11	3	3C144	118	-6	1.17	-12	-0.10	1691.63
	46	5	373	8	466	54	2	3C161	126	-13	1.20	-10	0.24	1691.61
	46	6	312	22	317	15	2	3C144+	118	-6	1.17	-13	0.02	1691.59
	46	11	363	9	375	8	2	3C273	140	-6	1.24	9	1.92	1691.56
	46	13	319	11	313	83	2	3C298	115	-2	1.16	14	1.97	1691.54
800216	47	0	327	12	371	14	3	3C48	70	2	0.94	-18	-1.75	1691.69
	47	3	414	27	408	55	2	3C147	116	0	1.16	-11	-0.10	1691.68
	47	4	407	11	411	15	3	3C144	117	-6	1.17	-13	-0.25	1691.68
	47	5	435	14	425	9	3	3C161	125	-13	1.20	-10	0.04	1691.68
	47	12	346	20	463	11	2	3C298	116	-2	1.16	13	1.82	1691.59
	47	21	274	43	257	31	2	3C459	25	16	0.42	-61	-8.61	1691.93
800217	48	0	327	7	337	8	3	3C48	69	2	0.93	-19	-1.83	1691.73
	48	3	415	88	410	84	2	3C147	115	0	1.16	-11	-0.17	1691.72
	48	3	384	55	406	28	2	3C144	116	-7	1.16	-13	-0.22	1691.71
	48	12	288	8	342	41	2	3C298	117	-2	1.17	13	2.02	1691.58
800218	49	4	335	54	344	34	2	3C144	115	-7	1.16	-13	-0.18	1691.72
	49	5	568	59	455	22	2	3C161	123	-13	1.19	-10	-0.17	1691.80
	49	13	374	13	425	13	3	3C298	118	-2	1.17	13	1.77	1691.68
800219	50	0	353	12	277	66	3	3C48	67	3	0.92	-21	-2.01	1691.83
	50	4	484	30	315	27	2	3C144	114	-7	1.16	-14	-0.51	1691.83
	50	12	390	33	523	228	3	3C298	119	-2	1.18	12	1.74	1691.72
	50	23	213	32	258	30	2	3C48	66	4	0.91	-21	-2.37	1691.75
800220	51	5	237	45	255	20	2	3C161	121	-14	1.18	-10	0.63	1691.68
	51	12	291	7	302	32	2	3C298	120	-2	1.18	12	2.02	1691.69
800221	52	0	303	9	302	21	4	3C48	65	4	0.91	-23	-2.35	1691.88
800222	53	0	306	11	328	9	3	3C48	64	4	0.90	-23	-2.37	1691.92
	53	3	315	21	280	18	2	3C144	111	-7	1.14	-14	-0.22	1691.85
	53	5	285	33	387	46	2	3C161	120	-14	1.18	-11	0.29	1691.81
	53	12	350	9	355	56	3	3C298	121	-2	1.18	13	1.88	1691.81
	53	23	293	8	300	16	4	3C48	63	5	0.89	-24	-2.56	1691.95
800223	54	2	505	16	639	74	2	3C147	110	0	1.14	-12	-0.43	1691.97
	54	3	249	14	319	11	3	3C144	110	-7	1.14	-15	-0.12	1691.82
	54	4	333	14	365	103	3	3C161	119	-14	1.18	-10	0.17	1691.89
	54	12	362	36	343	22	2	3C298	122	-2	1.19	12	1.83	1691.85
	54	23	321	9	314	9	3	3C48	62	5	0.88	-25	-2.61	1692.01
800224	55	2	239	10	243	10	2	3C147	109	0	1.13	-12	0.09	1691.84
	55	3	257	16	384	34	2	3C144	109	-7	1.13	-14	-0.12	1691.87
	55	4	243	35	279	12	2	3C161	118	-14	1.17	-11	0.45	1691.84
800225	56	0	262	*	270	*	2	3C48	61	6	0.87	-25	-2.86	1692.01
	56	23	384	60	405	22	2	3C48	60	6	0.87	-26	-2.65	1692.12
800226	57	2	360	43	364	47	2	3C147	108	0	1.13	-13	-0.32	1692.03
	57	3	312	16	316	23	2	3C144	107	-7	1.12	-14	-0.36	1692.00
	57	4	317	13	380	15	2	3C161	116	-14	1.16	-12	0.04	1691.99
	57	23	362	24	397	80	2	3C48	59	7	0.86	-27	-2.79	1692.15
800227	58	3	258	25	267	63	2	3C144	106	-7	1.12	-15	-0.32	1691.99
	58	23	307	29	239	14	2	3C48	58	7	0.85	-27	-3.03	1692.16
800228	59	23	329	12	330	12	3	3C48	58	7	0.85	-29	-3.08	1692.21
800229	60	3	253	13	333	33	2	3C144	104	-7	1.11	-15	-0.38	1692.06

VMID IS A MEAN AND VPK IS A MAXIMUM VELOCITY IN THE IPS SCATTERING REGION.
THE REGION'S CENTROID IS SPECIFIED BY LAT, DIST, DLON.
LAG AND ROTATION NUMBER GIVE MAPPING TO EARTH AND SUN AT VMID.
* INDICATES NO ERROR AVAILABLE, SINCE ONLY TWO ANTENNAS WERE OPERATING.

INFERRED IP MAGNETIC FIELD

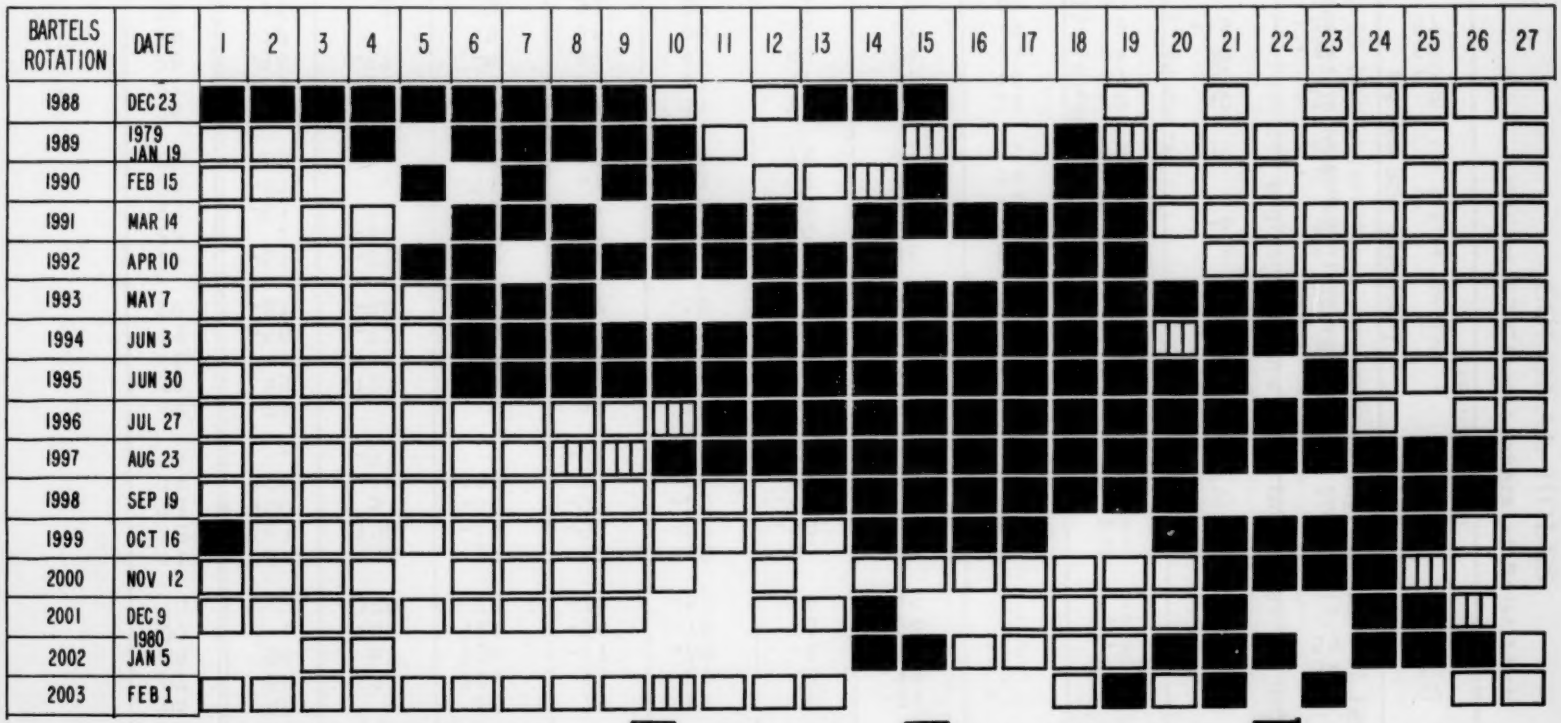
BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1986	NOV 4		-				-	AT -	-		-	-						*	AT	-		AT	AT	AT	AT			
1987	DEC 1	AT	AT	-					-		-	TA	-	-	AT -	-	AT -	TA -	-	A*	-		*		-	AT -	-	
1988	DEC 28		-	-	-	-			-	AT *			TA	TA	T*		-	AT -	-	TA			-	TA -				TA	-
1989	1979 JAN 24		-			*		TA			TA		TA							*					-		AT		
1990	FEB 20		TA		-	TA -	TA			-	TA -	TA		TA		TA	A*		TA	A*		TA	A*			A*			
1991	MAR 19		AT			AT		T*						*	-	-	-		-	TA -		AT		T*	TA	TA	-	A*	-		TA	A*
1992	APR 15		A*	TA	T*	AT		TA	TA		T*						TA		*	-	-	AT -	TA					A*		-	TA	
1993	MAY 12									-	-		AT			*		TA				AT	AT						-	-	-	-
1994	JUN 8	TA	TA	A*		TA					-	AT		-						T*	-	TA			TA	T*			AT	T*	-	TA	
1995	JUL 5	TA	TA	AT			TA	AT	A*	TA	TA	-		TA		AT					*				TA	T*						TA
1996	AUG 1			AT		A*	-		TA	-	-	-	T*					*	-			AT						AT	*			
1997	AUG 28			-		A*					AT								-		-		T*		-	AT	TA	-		TA	AT		
1998	SEP 24						A*		AT	-		TA		A*	*			TA			-			TA				TA		TA	-		*
1999	OCT 21								T*			TA	-		-					AT	AT *		AT									
2000	NOV 17	-	TA -			AT					*				AT				AT -	TA		-		TA			-	-				
2001	DEC 14				-				TA		TA		-	-	AT -			AT		AT *			TA	AT	T*							-
2002	1980 JAN 10						AT	-		-				-	TA	AT	T*	TA	AT							TA		A*				
2003	FEB 6		TA			-				A*							TA					-			*	TA						

[ ] = definitely towards the sun [ ] = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: □ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

Note: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the sun which affect the Earth during the given Bartels Rotation.

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

	1979						1980					
DAY	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.
01	-36	-4	26	41	97	24	-5	-32	-6	16	-37	94
02	.	16	13	82	86	21	-8	-27	.	-3	-28	96
03	.	57	6	137	70	6	-36	-27	.	-24	1	87
04	-24	44	10	115	35	4	-28	-36	-5	-18	.	72
05	-6	11	45	104	-33	2	-20	-45	-8	-6	.	72
06	46	9	68	78	-61	-6	-24	-31	-17	-1	.	57
07	64	14	101	15	-81	-8	-39	-22	-12	18	54	49
08	56	67	134	-27	-80	-8	-46	-45	-3	35	59	31
09	.	102	126	-50	-70	-6	-54	.	-6	75	.	10
10	.	124	75	-76	-68	-16	-45	.	6	99	.	0
11	21	138	31	-82	-75	-43	-47	.	29	83	.	10
12	63	100	-13	-52	-23	-59	-67	-55	46	60	.	11
13	100	51	-66	-52	-23	-46	-74	-62	52	32	.	3
14	106	-12	-104	-37	-20	-33	-53	-49	45	44	.	.
15	.	-51	.	-28	-24	-38	-41	.	26	29	.	.
16	24	.	.	-42	-30	-61	-26	-6	.	20	.	.
17	45	-121	.	-43	-26	-57	-18	20	13	18	.	.
18	.	-117	-27	-35	-32	-41	3	29	41	.	-17	5
19	-56	-72	-29	-32	-16	4	15	25	35	.	-8	-13
20	-81	-40	-36	-37	-10	.	41	52	35	7	33	3
21	-81	-27	-34	-24	.	41	46	64	30	6	32	-7
22	.	-32	-43	0	-16	55	64	69	.	-6	10	.
23	-51	-40	-56	-7	6	58	59	48	22	.	3	-32
24	-41	.	-51	-7	33	68	65	50	.	.	-12	.
25	-28	.	-30	10	58	74	63	35	12	35	-25	.
26	.	-99	-16	17	69	77	40	26	20	40	-31	6
27	-29	-92	-17	29	83	47	37	16	27	27	.	43
28	-36	-57	-4	47	92	40	24	3	24	23	-34	58
29	-12	.	19	64	90	32	21	-9	39	-18	-26	57
30	-26	3	10	93	82	1	7	-7	37	.	-13	
31	-28		9		53	-1		-22		.	29	

DOT SYMBOL ENTRY INDICATES NO DATA AVAILABLE FOR THE DAY.

Only
are

CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

FEBRUARY 1980

Big Bear Solar Observatory

Only two D3 limb observations were made during the month of February. These data are presented in numerical form rather than graphically.

Position angles of coronal hole boundaries (in degrees)

Date	North	South
2 February	+51 to +38	-143 to +160
	+21 to -43	
10 February		-124 to +145

BOULDER GEOMAGNETIC SUBSTORM LOG

FEBRUARY 1980

DATE	ONSET TIME	DIR	COMMENTS
02/01	0705		Weak SS
	1155		Weak SS Polar cap and mid-latitude stations active after 1720 UT with no SS activity.
02/02			Field unsettled 0400-1500 UT.
	0805	West	
02/03			Quiet day
02/04			Field unsettled 0615-1400 UT. No distinctive SS activity.
02/05	0905	West	Single injection, recovery near 1120 UT.
02/06	0320	SSC	Magnetic storm conditions through 2100 UT.
	1410		Strong SS. East-West current system over Ft. Yukon and Norman Wells.
02/07	1145	West	Single injection, recovery near 1330 UT. Field unsettled after 1800 UT. No distinctive SS activity.
02/08			Field active 0330-1800 UT.
	1420	West	
02/09	0345		Weak positive impulse on H component at all mid/low-latitude stations. Field active 0600-2000 UT. No distinctive SS activity.
02/10			Quiet day
02/11			Field slightly unsettled 0800-1300 UT.
02/12			Field slightly unsettled 0800-1500 UT.
02/13			Quiet day
02/14	0310		Positive impulse on H component at all mid/low-latitude stations. Minor magnetic storm conditions through 1900 UT.
	0810		Slow onset, numerous injections and recovery near 1230 UT.
	1420		Numerous injections with recovery near 1800 UT.
02/15	0820		Weak SS, localized Norman Wells to Arctic Village to Inuvik.
	1900		Gradual onset to major magnetic storm.
02/16			Major magnetic storm continued through 1600 UT.
02/17			Field slightly unsettled after 1400 UT.
02/18			Field unsettled after 0600 UT; no distinctive SS activity.
02/19	0235	East	Weak SS
	0330	East	Weak SS
	0730	West	Weak SS
02/20	0955	West	Field remained slightly unsettled through 1700 UT.
02/21			Quiet day
02/22			Quiet day
02/23			Field unsettled 0800-2100 UT. No distinctive SS activity.
02/24	1130		Weak SS, localized College to Arctic Village.
	1445	West	
02/25	1427		Weak, positive impulse on H component at all mid/low-latitude stations. Field active balance of day with no distinctive SS activity.
02/26			Field intermittently unsettled throughout day.
	1220		SS along auroral oval stations only.
02/27	0830		Several injections; response strongest at Alaskan polar cap stations.
	1220	West	Strong SS; several injections with recovery near 1500 UT. Field remained unsettled balance of day.
02/28	0750	West	Weak SS
	0845		Moderate SS high-latitude polar cap stations only.
	1020		Moderate SS localized at College. Several injections with recovery near 1230 UT.
02/29			Field intermittently unsettled with no distinctive SS activity.

SGD 427 Part I (Prompt)

JANUARY 1980 DATA

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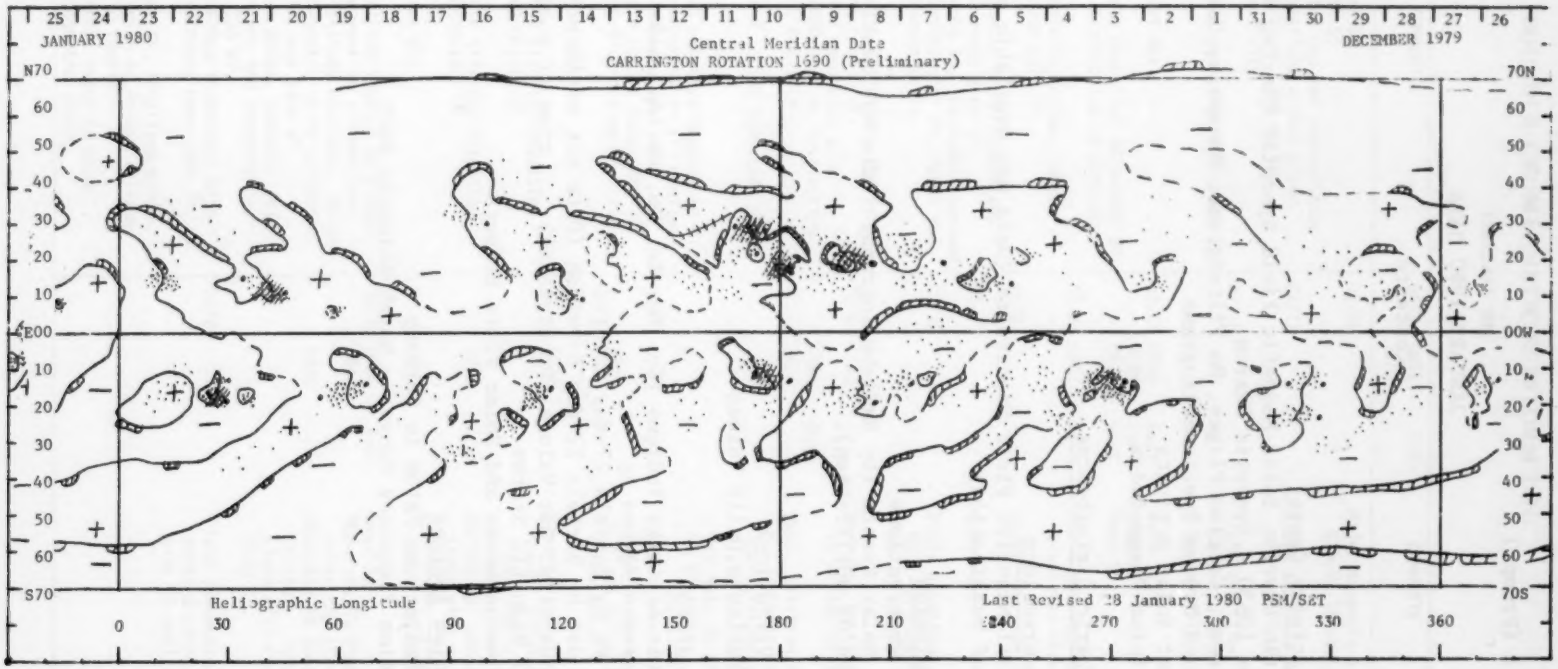
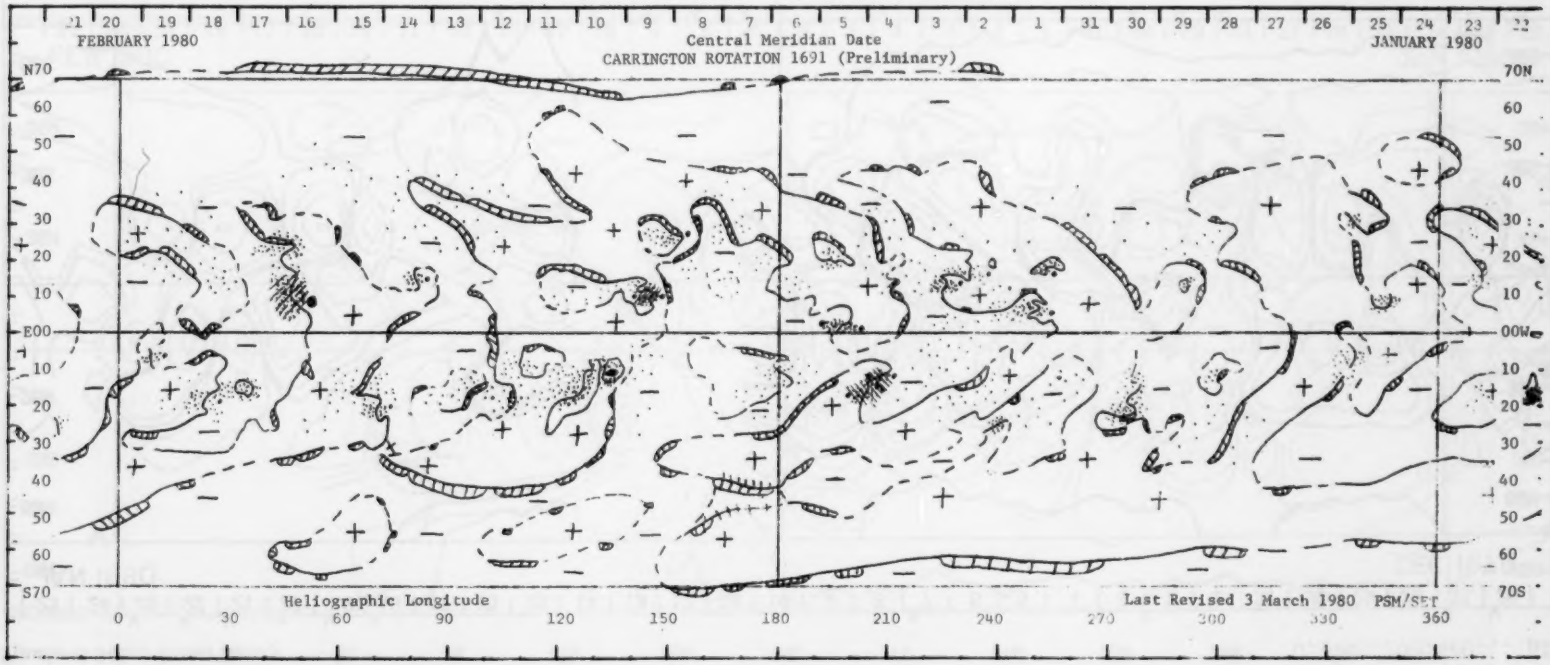
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1690 (PRELIMINARY)



Hα SYNOPTIC CHART

CARRINGTON ROTATION 1691 (PRELIMINARY)

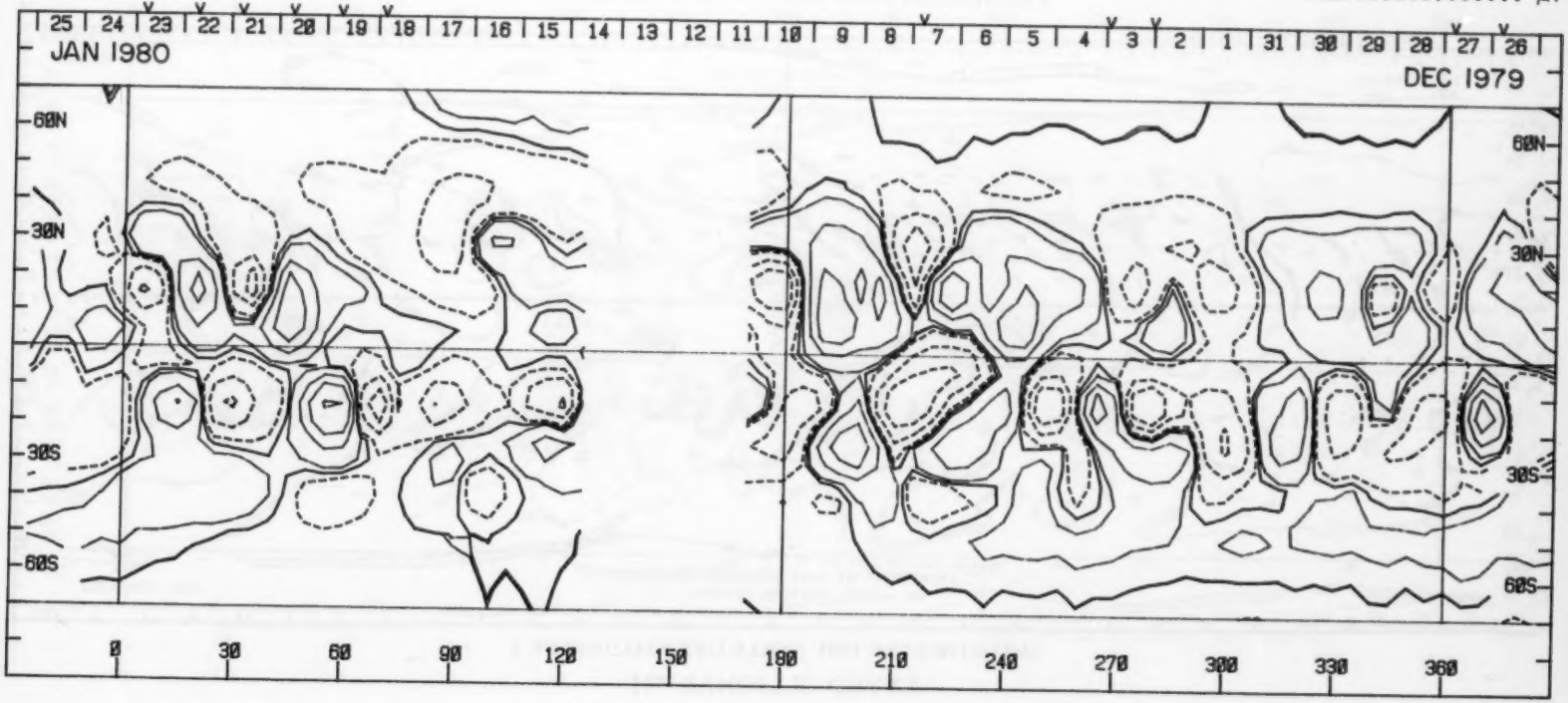


SOLAR MAGNETIC FIELD SYNOPTIC CHART

CARRINGTON ROTATION 1690

Stanford Solar Observatory

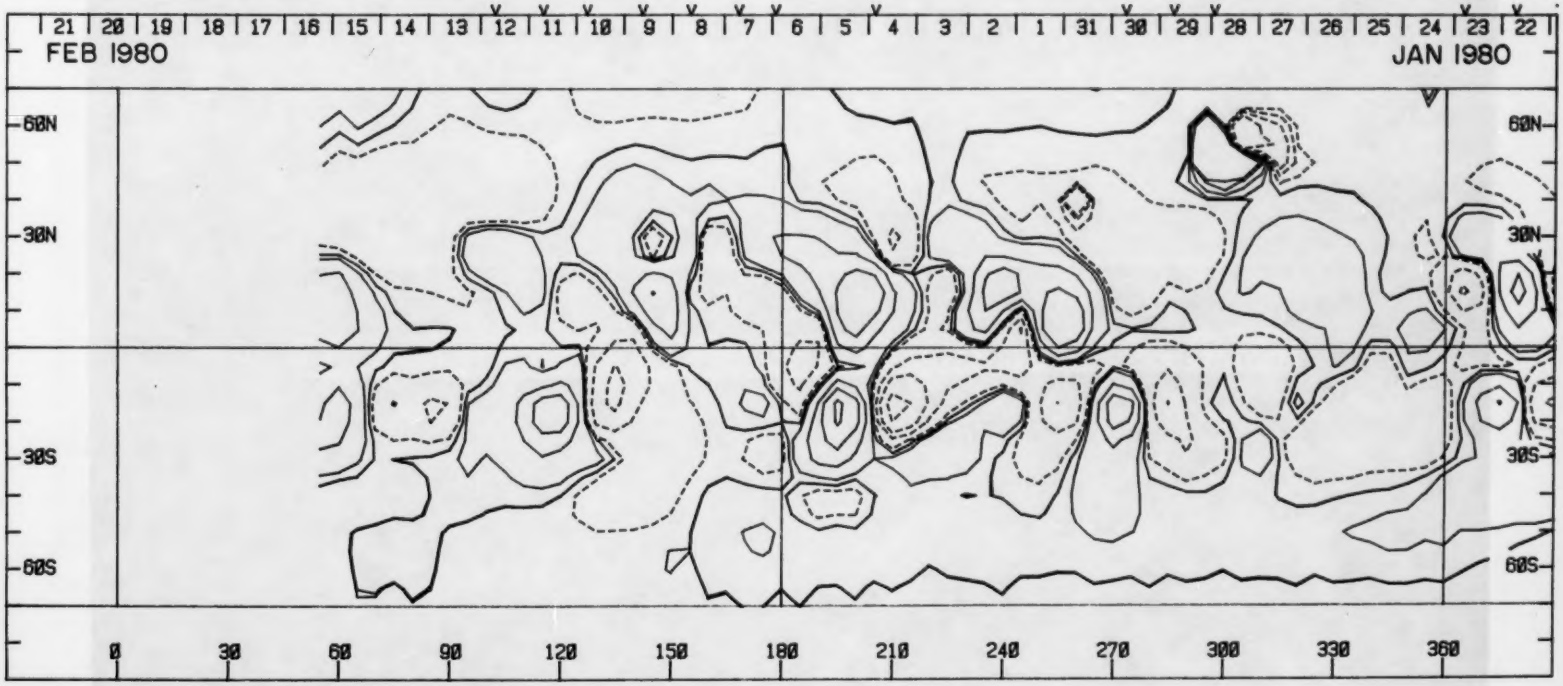
0.±100.200.500... μT

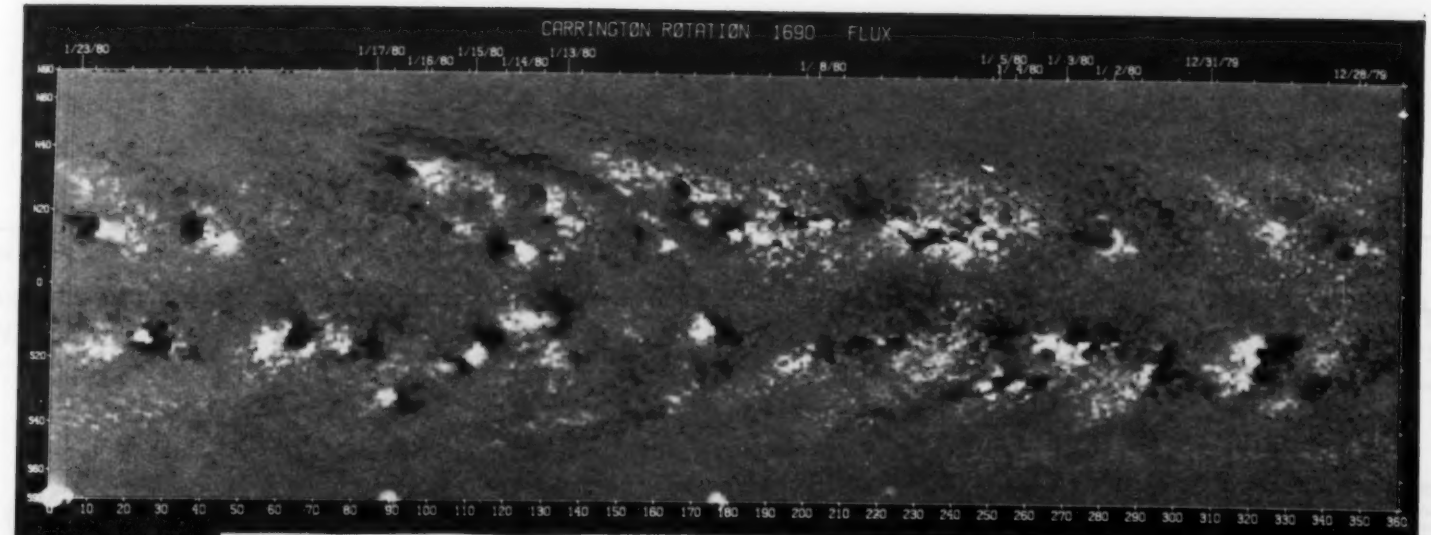


SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1691

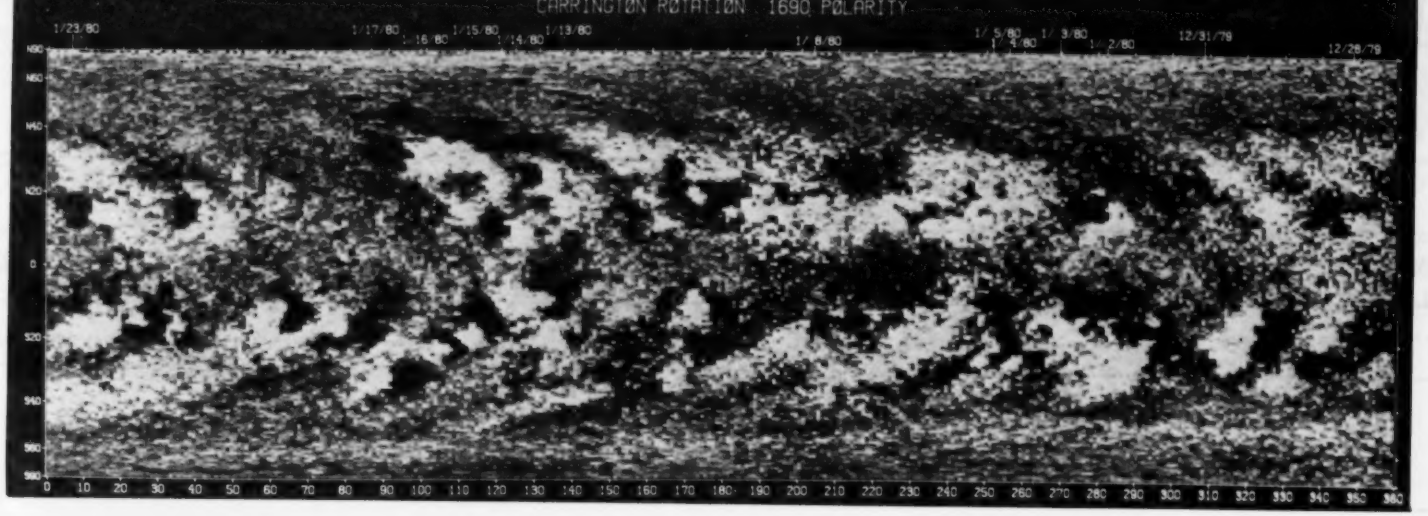
Stanford Solar Observatory

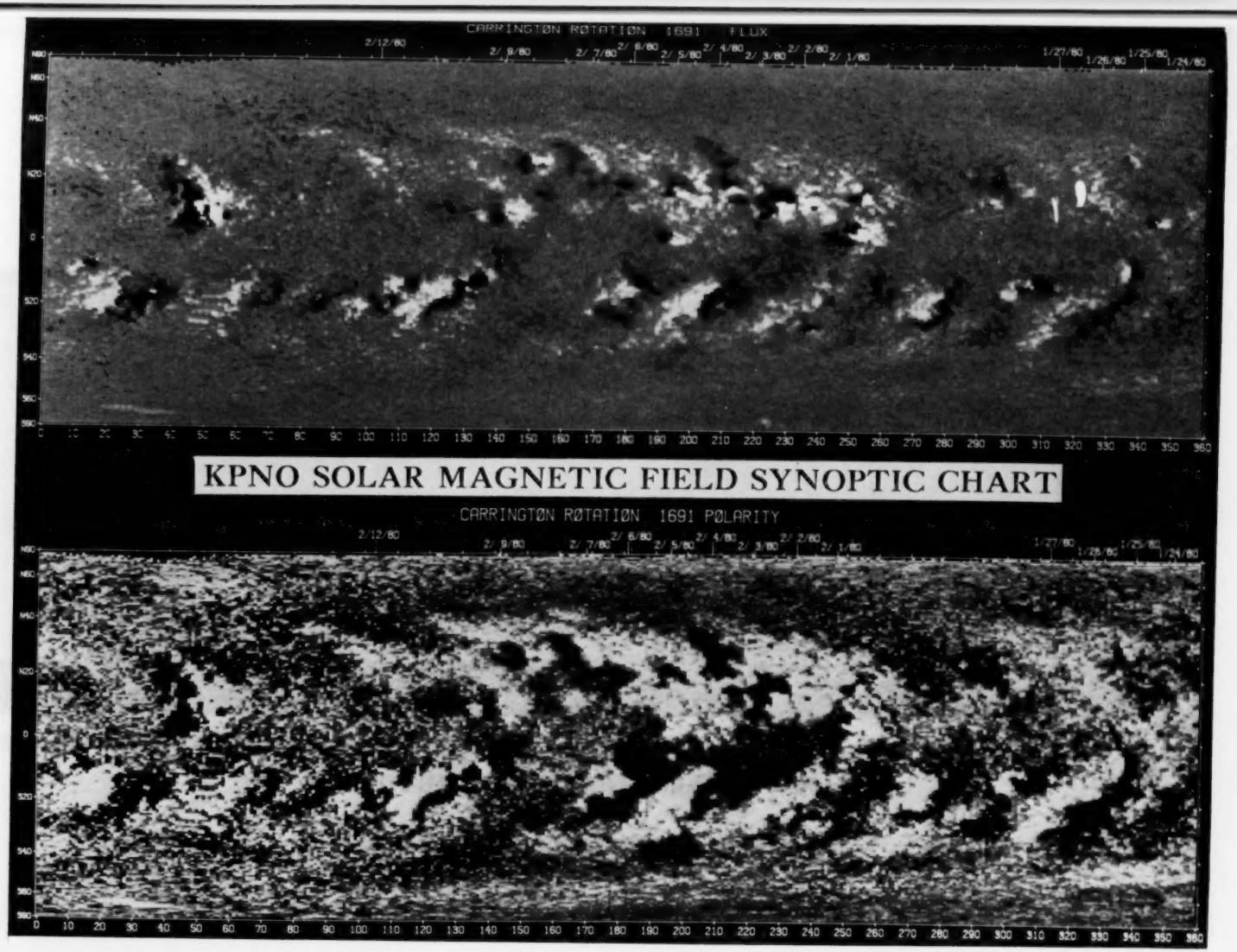
0,±100,200,500... μT





KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART

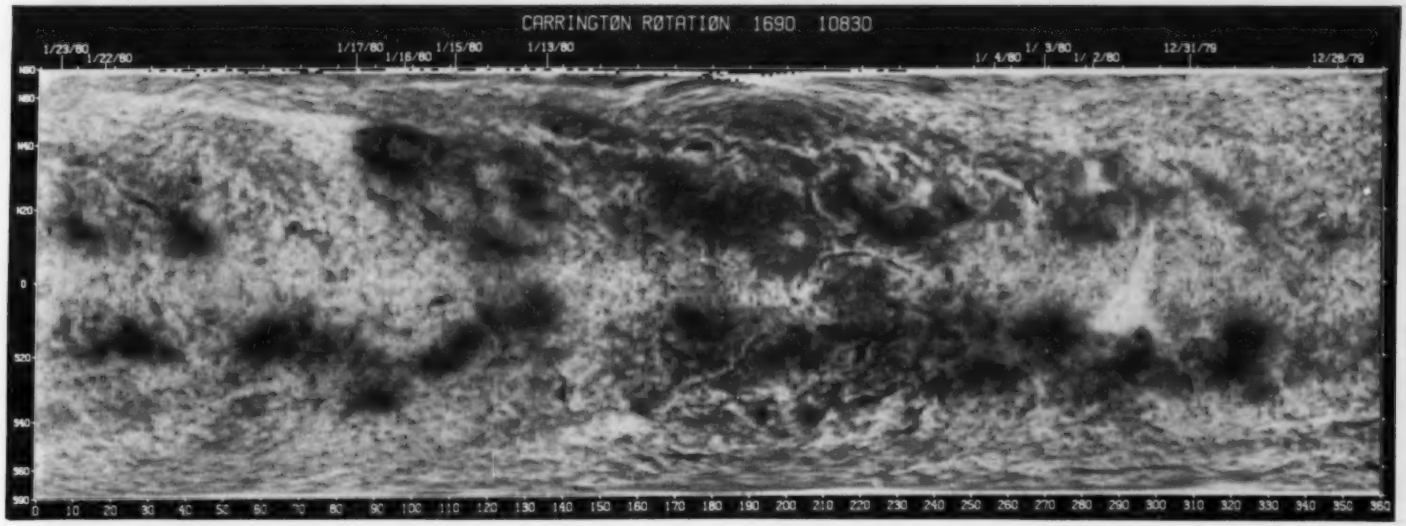



CARRINGTON ROTATION 1691 FLUX
2/12/80
2/ 9/80
2/ 7/80
2/ 6/80
2/ 5/80
2/ 4/80
2/ 3/80
2/ 2/80
2/ 1/80
1/27/80
1/26/80
1/25/80
1/24/80
N80
N60
N40
N20
0
S20
S40
S60
S80
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360
KPNO SOLAR MAGNETIC FIELD SYNOPTIC CHART
CARRINGTON ROTATION 1691 POLARITY
2/12/80
2/ 9/80
2/ 7/80
2/ 6/80
2/ 5/80
2/ 4/80
2/ 3/80
2/ 2/80
2/ 1/80
1/27/80
1/26/80
1/25/80
1/24/80
N80
N60
N40
N20
0
S20
S40
S60
S80
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360

HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1690

KITT PEAK NATIONAL OBSERVATORY



JANUARY 1, 1980 (P = 2.43, B_o = -2.97, L_o = 305.19)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E NO DATA W

Sp

MT. WILSON Np MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.7
DELTAX = 9.4

E W

Levels
± 5
± 10
± 20
± 40
± 80

17.43 - 19.34 UT

Sp

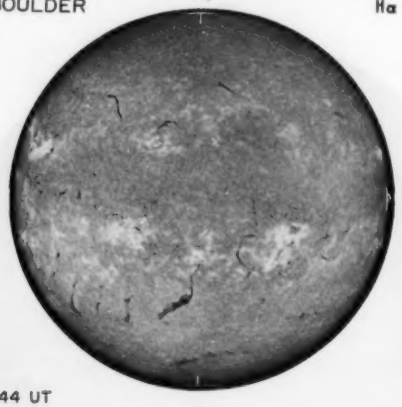
01

BOULDER Np Hα

BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

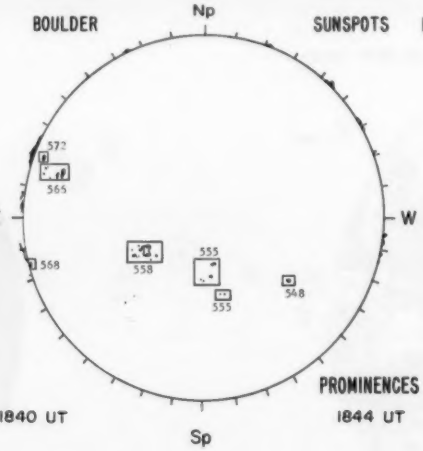
01

BOULDER Np Hα



1844 UT

BOULDER Np SUNSPOTS

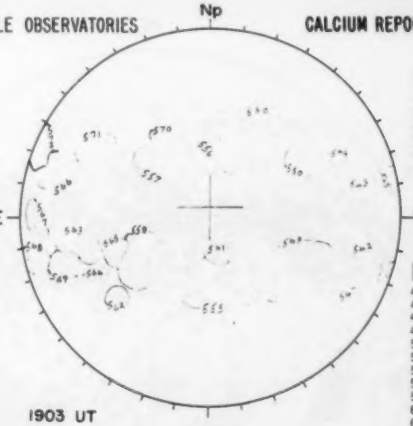


1840 UT

PROMINENCES

1844 UT

HALE OBSERVATORIES Np CALCIUM REPORT



1903 UT

POOR	JA
41-	0400-2.5
43-	0200-2.5
45-	0600-2.5
48-	4100-3.5
50-	[illegible]-2.5
55-	1300-3.0
56-	0400-3.0
57-	1200-3.0
58-	4000-3.0
61-	0200-2.5
63-	1500-2.5
64-	0400-2.5
65-	0900-3.0
66-	3200-4.0
72-	0800-3.0

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

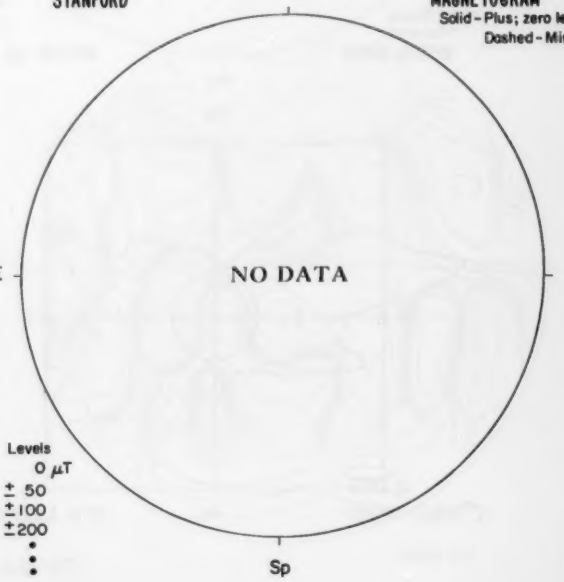
NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

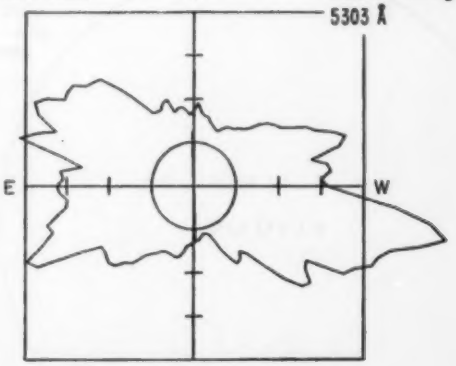


Levels
0 μT
± 50
±100
±200

51
Jan 80

JANUARY 2, 1980 (P = 1.95, B_o = -3.09, L_o = 292.02)

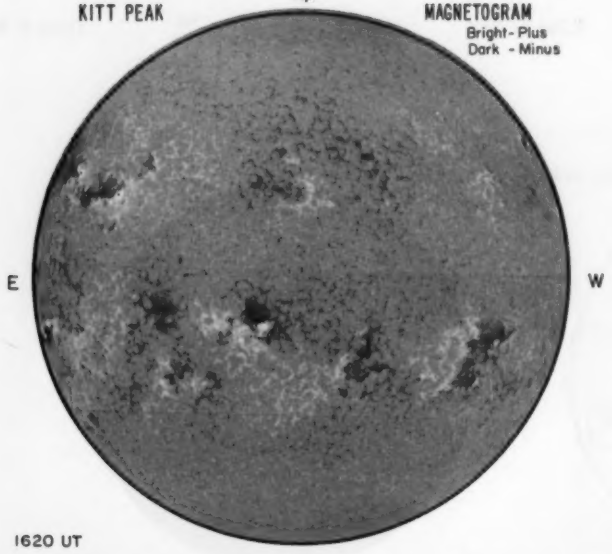
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



1737 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



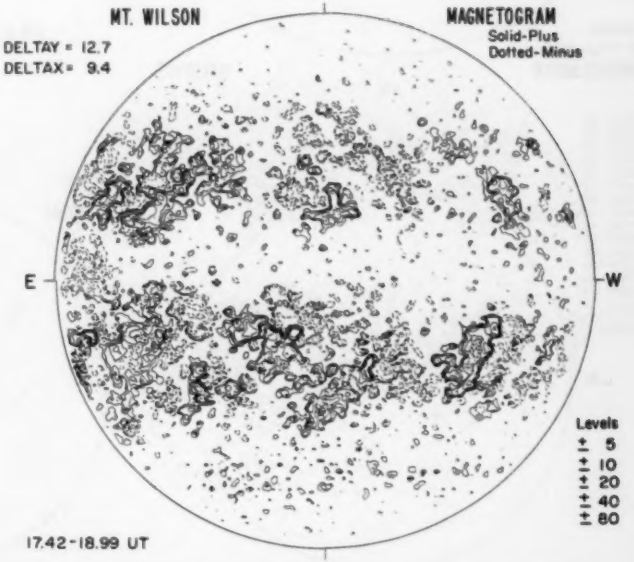
1620 UT

Sp

Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.4



17.42-18.99 UT

Sp

02

BOULDER Np Hα

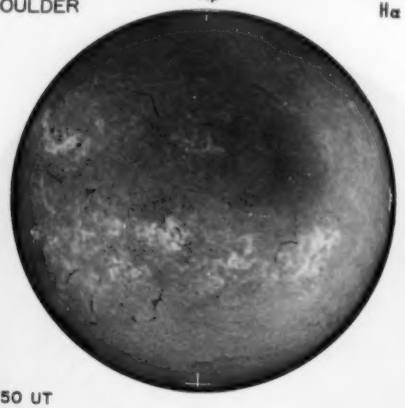
BOULDER Np

SUNSPOTS HALE OBSERVATORIES Np

CALCIUM REPORT

02

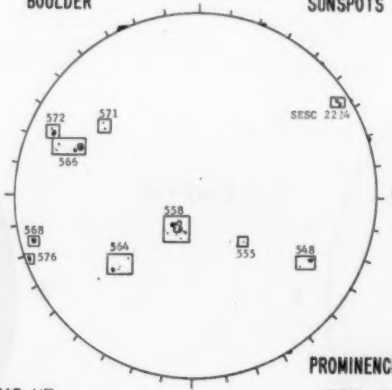
BOULDER Np Hα



E W

1750 UT Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



E W E W

1810 UT Sp

PROMINENCES

1750 UT Sp

Np CALCIUM REPORT

NO DATA 2-3 JAN

W

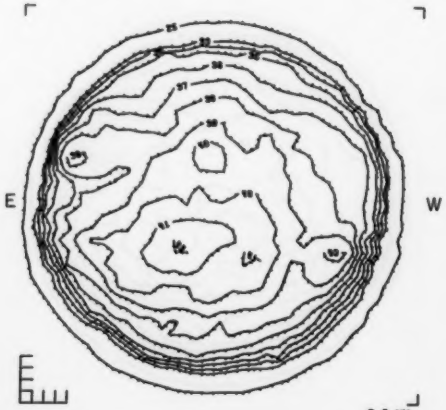
Sp

NOSC LA POSTA Np 2.0 CM

E W

1913 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

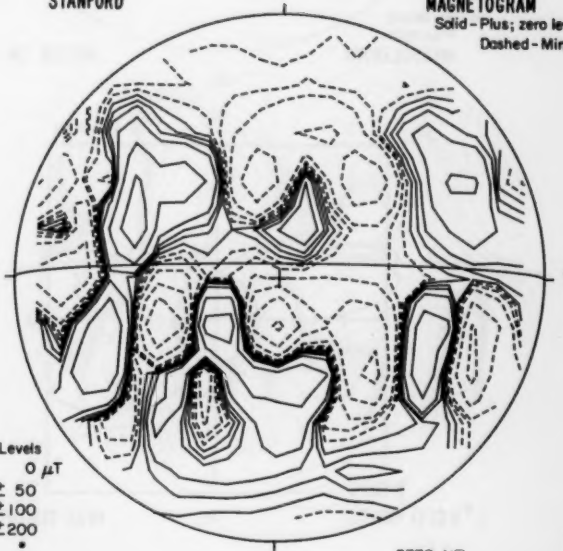


E W

1820 UT 8.6 MM Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus



E W

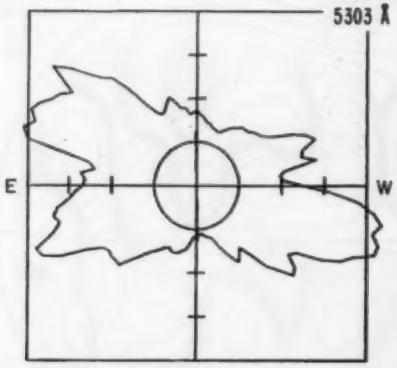
Levels
0 μT
± 50
± 100
± 200

Sp 2339 UT

53
Jan 80

JANUARY 3, 1980 (P = 1.46, B_o = -3.20, L_o = 278.85)

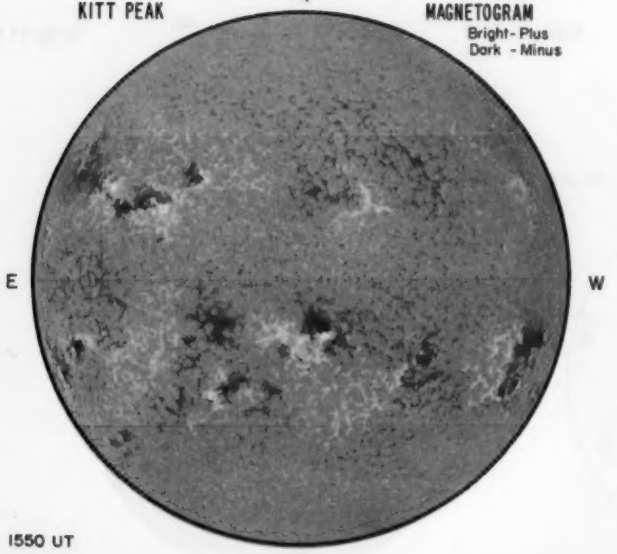
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



1614 UT

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



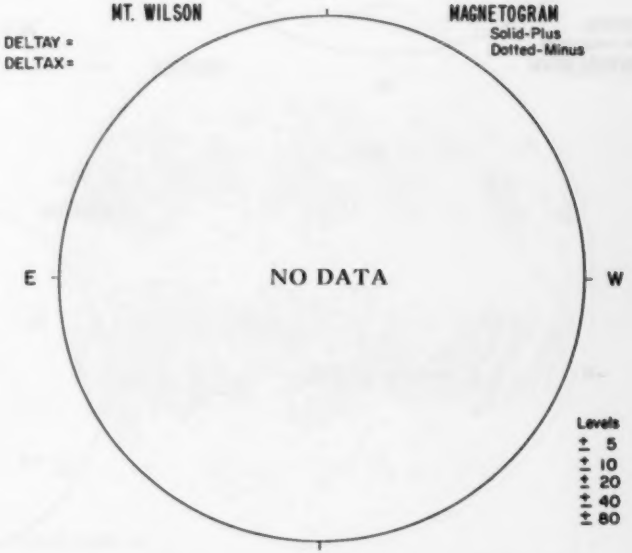
1550 UT

Sp

Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =



Sp

03
BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

03

BOULDER Np Hα

E NO DATA W

Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

E NO DATA W E W

PROMINENCES

Sp Sp

NOSC LA POSTA Np 2.0 CM

E W

1925 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

E W

1811 UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E W

Levels

0 μT

± 50

±100

±200

2143 UT

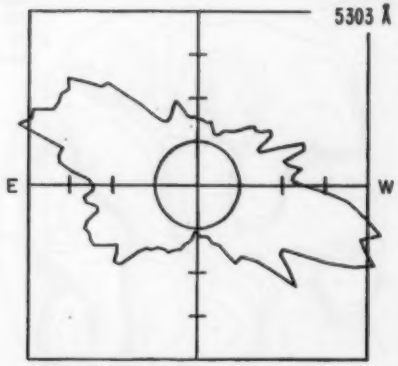
Sp

55

Jan 80

JANUARY 4, 1980 (P = 0.98, B_o = -3.32, L_o = 265.68)

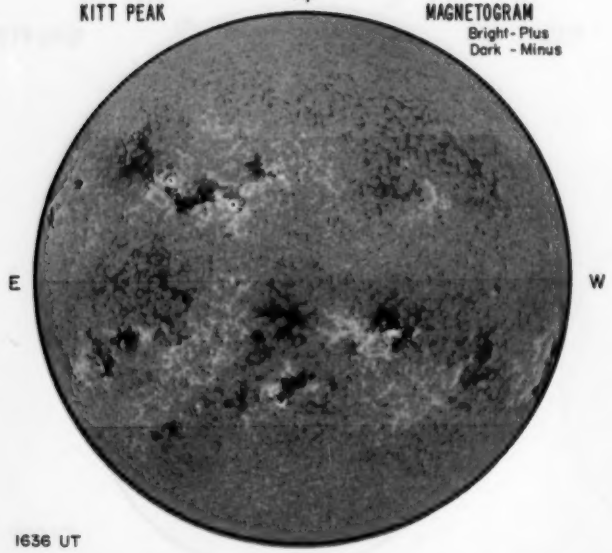
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



2030 UT

Sp

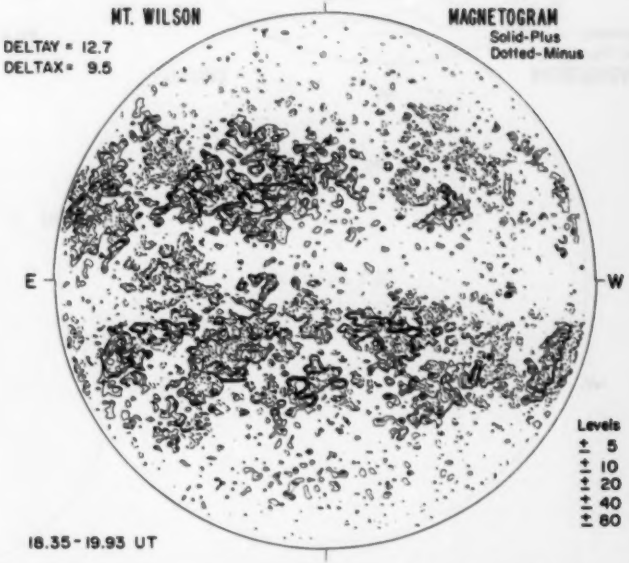
KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1636 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.5

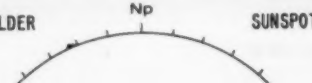


18.35 - 19.93 UT

Sp

04
BOULDER Np Hα

BOULDER Np SUNSPOTS



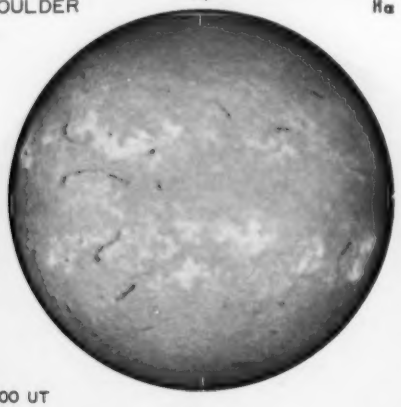
HALE OBSERVATORIES Np CALCIUM REPORT

04

BOULDER

Np

Hα



E W

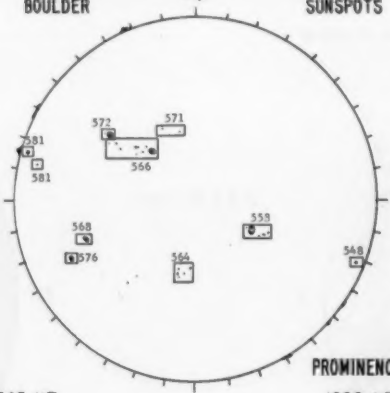
Sp

1600 UT

BOULDER

Np

SUNSPOTS



E W

Sp

1545 UT

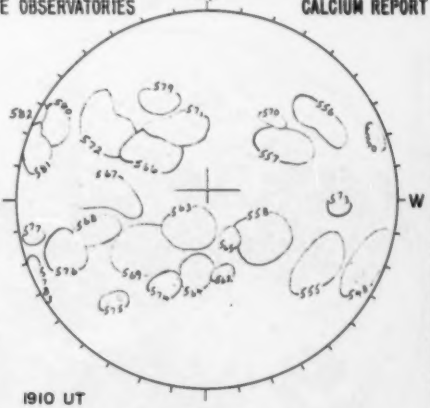
PROMINENCES

1600 UT

HALE OBSERVATORIES

Np

CALCIUM REPORT



E W

Sp

1910 UT

GOOD	JA
48-	2400-3.0
50-	0200-2.5
55-	1500-2.5
56-	0700-2.5
57-	0800-3.0
58-	2500-3.5
62-	0200-2.5
63-	1300-3.0
64-	1200-3.5
65-	0300-3.0
66-	2600-3.5
67-	0900-2.5
68-	1500-3.0
69-	1400-3.0
70-	0100-2.5
71-	1800-4.0
72-	3700-3.5
74-	0400-2.5
75-	0200-2.5
76-	1900-3.0
79-	0300-2.5
80-	0605-2.5
81-	2000-3.0

STANFORD

Np

MAGNETOGRAM

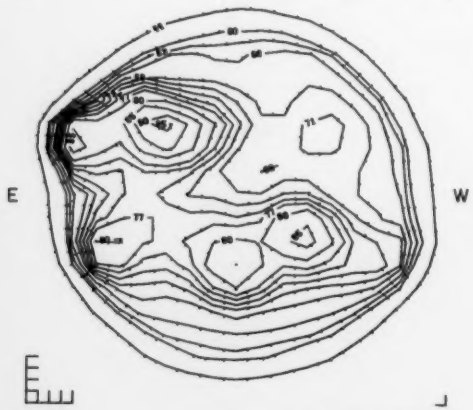
Solid - Plus; zero level

Dashed - Minus

NOSC LA POSTA

Np

2.0 CM



E W

1918 UT

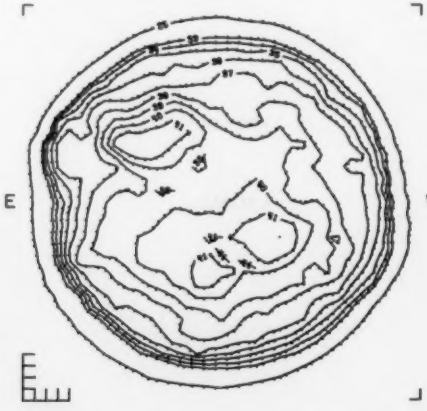
Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM



E W

1810 UT

Sp

Ant. Temp. Unit 100° K

E

NO DATA 4-6 JAN

W

Levels

0 μT

± 50

±100

±200

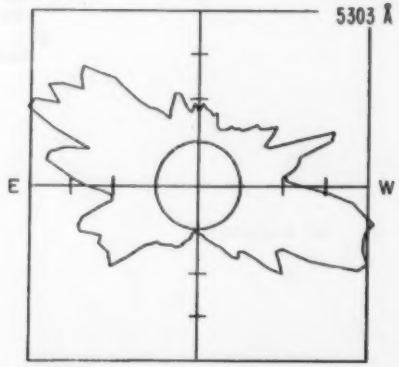
Sp

57

Jan 80

JANUARY 5, 1980 (P = 0.49, B_o = -3.43, L_o = 252.51)

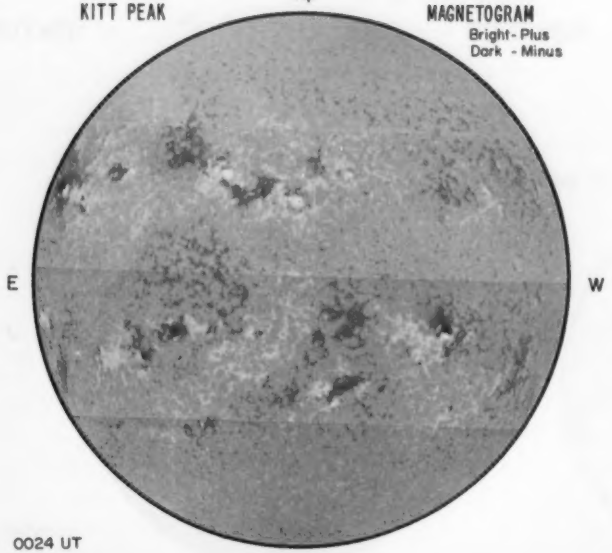
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



1610 UT

Sp

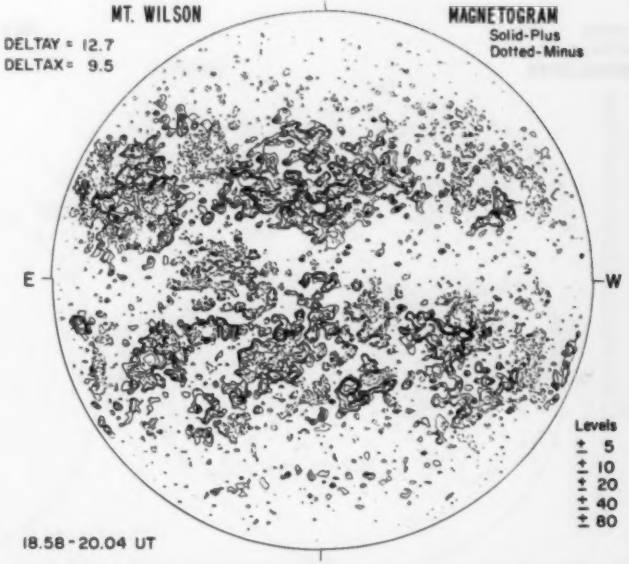
KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



0024 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.5

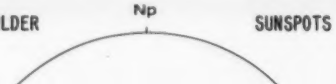


18.58 - 20.04 UT

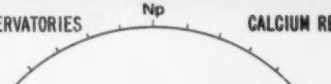
Sp

05
BOULDER Np Hα

BOULDER Np SUNSPOTS



HALE OBSERVATORIES Np CALCIUM REPORT



Sp

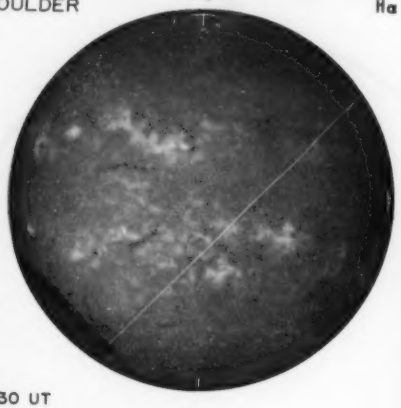
Sp

05

BOULDER

Np

Hα



E W

1530 UT

Sp

BOULDER

Np

SUNSPOTS

NO DATA

E W

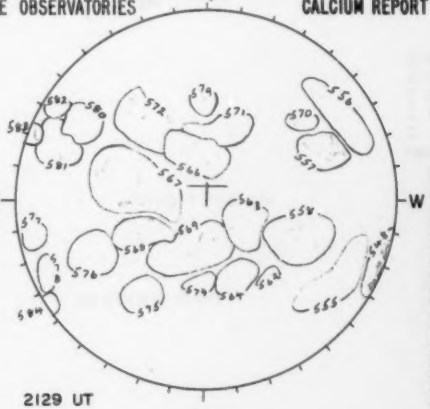
PROMINENCES

Sp

HALE OBSERVATORIES

Np

CALCIUM REPORT



E W

2129 UT

Sp

POOR	JA
48- 1100-3.0	
55- 1700-3.0	
56- 0800-2.5	
57- 0900-2.5	
58- 3200-3.5	
62- 0100-2.5	
63- 1200-3.0	
64- 1500-3.0	
66- 2700-3.5	
67- 1300-3.0	
68- 1500-3.5	
69- 1600-3.0	
71- 1200-3.0	
72- 3900-3.5	
74- 0200-2.5	
76- 1600-3.0	
77- 0700-3.5	
78- 0700-2.5	
80- 1900-4.0	
81- 4400-3.5	
82- 0400-2.5	
83- 0400-3.0	

Np

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NOSC LA POSTA

Np

2.0 CM

NO DATA

E W

SCHEDULE

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM

NO DATA

E W

SCHEDULE

---- UT

Sp

Ant. Temp. Unit 100° K

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

59

Jan 80

JANUARY 6, 1980 (P=0.01, B_o=-3.54, L_o=239.34)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E NO DATA W

Sp

Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA 6 - 15 JAN W

Sp

Levels
± 5
± ± 10
± ± 20
± ± 40
± ± 80

06

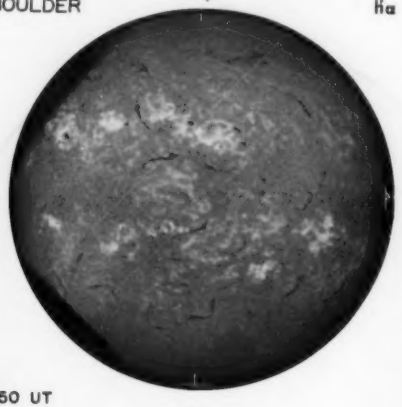
BOULDER Np Hα

BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

06

BOULDER Np Hα

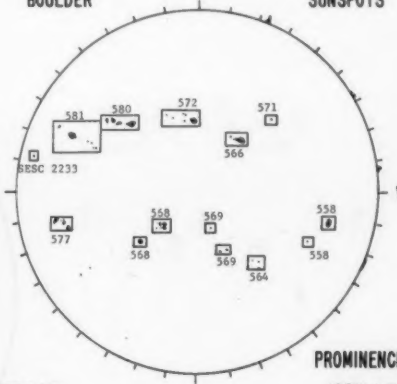


E W

1950 UT

Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



E W E

2030 UT

Sp

PROMINENCES

1950 UT

Np

NO DATA 6-15 JAN

W

Sp

CALCIUM REPORT

Np

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

W

61

Jan 80

JANUARY 7, 1980 (P=-0.48, B_o=-3.66, L_o=226.17)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E NO DATA W

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

07
BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

07

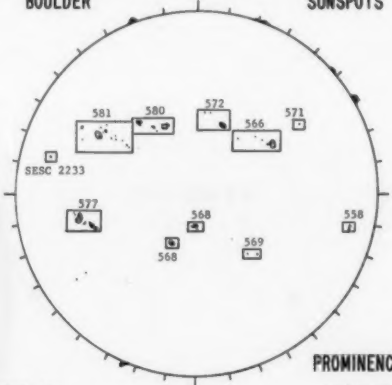
BOULDER Np Hα

E W

2000 UT

Sp

BOULDER Np SUNSPOTS



E W

1730 UT

Sp

HALE OBSERVATORIES Np

PROMINENCES

E W

2000 UT

Sp

CALCIUM REPORT

E W

Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

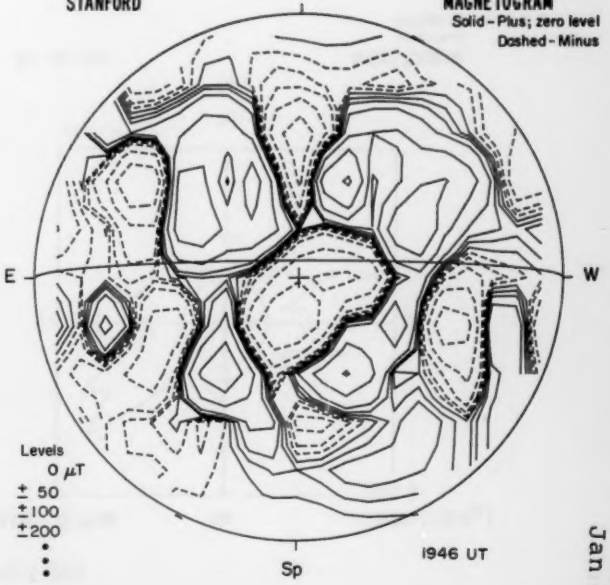
E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

1946 UT

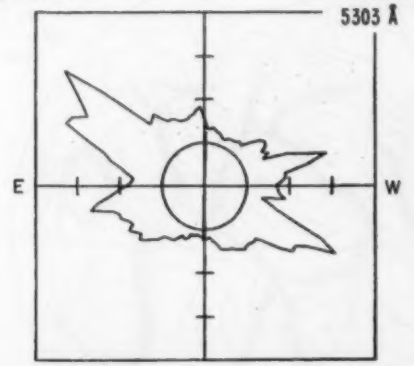
Sp

63

Jan 80

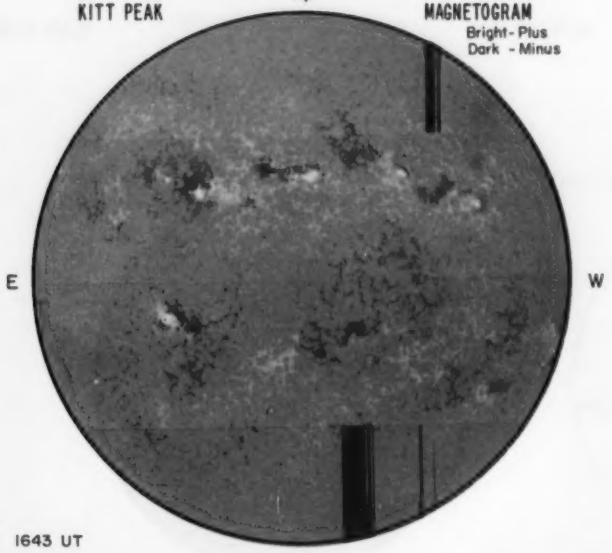
JANUARY 8, 1980 (P=-0.96, B_o=-3.77, L_o=213.00)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY =
DELTAX =

E W

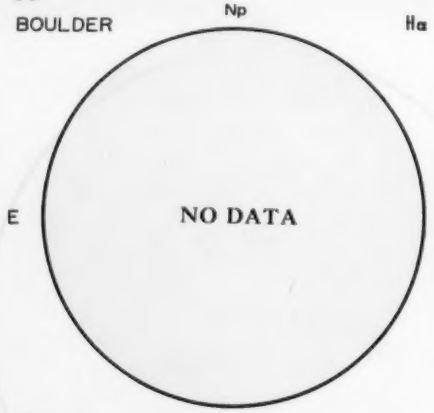
Sp

Levels
± 5
± 10
± 20
± 40
± 80

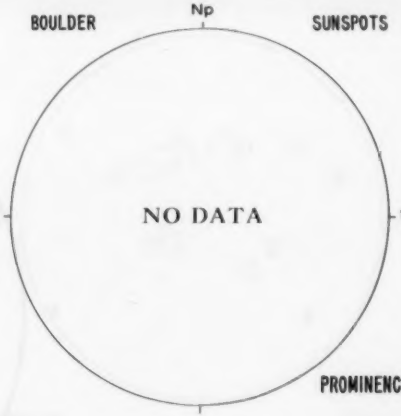
OB
BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

OB

BOULDER Np Hα



BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT



PROMINENCES

E W Sp

Np

STANFORD

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

NO DATA 8-17 JAN

W

Levels
0 μT
± 50
±100
±200
•
•
•

Sp

65
Jan 80

JANUARY 9, 1980 (P = -1.45, B_o = -3.88, L_o = 199.83)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E NO DATA W

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E W

Levels
± 5
± 10
± 20
± 40
± 80

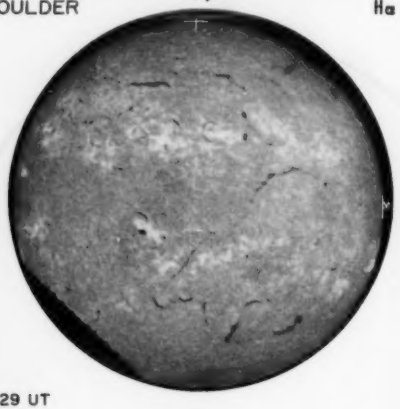
Sp

09
BOULDER Np Hα

BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

09

BOULDER Np Hα

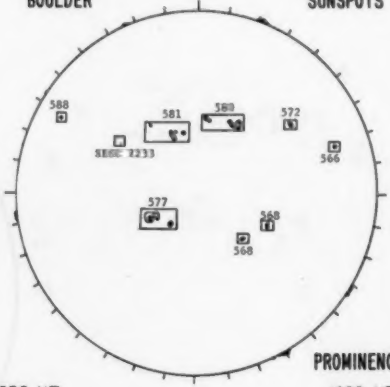


E W

1629 UT

Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



E W E W

1650 UT

Sp

PROMINENCES

1629 UT

Sp

Np CALCIUM REPORT

W

Sp

Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

STANFORD

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

Levels

0 μT

± 50

± 100

± 200

• • •

Sp

67

Jan 80

JANUARY 10, 1980 (P =-1.93, B_o =-3.98, L_o = 186.66)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E NO DATA W

Sp

Np MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E W

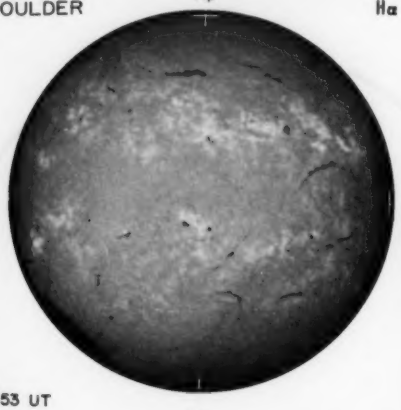
Levels
± 5
± ± 10
± ± 20
± ± 40
± ± 80

Sp

IO
BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

10

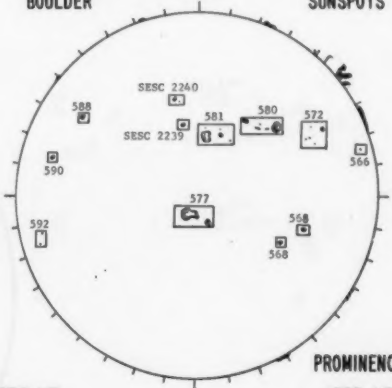
BOULDER Np Hα



E W

1553 UT Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



E W E W E

PROMINENCES

1630 UT Sp 1553 UT Sp

Np CALCIUM REPORT

W

Np

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W E

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

WEATHER W E

---- UT Sp Ant. Temp. Unit 100° K

Levels

0 μT

± 50

±100

±200

Sp

W

69 Jan 80

JANUARY 11, 1980 (P=-2.41, B_o=-4.09, L_o=173.49)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E NO DATA W

Sp

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

E W

Sp

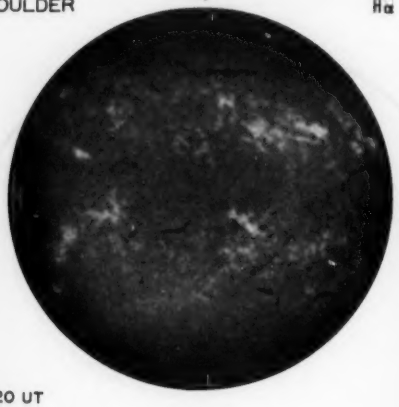
Levels
± 5
± 10
± 20
± 40
± 80

BOULDER Np Hα

BOULDER Np SUNSPOTS

HALE OBSERVATORIES Np CALCIUM REPORT

BOULDER Np Hα

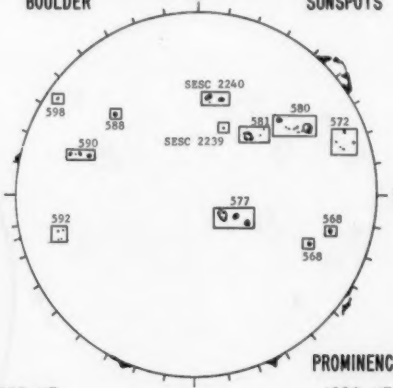


E W

1620 UT

Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



E W E

1600 UT

Sp

PROMINENCES

1620 UT

Sp

Np

CALCIUM REPORT

W

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W

---- UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E WEATHER W

---- UT

Sp Ant. Temp. Unit 100° K

STANFORD Np

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

W

71

Jan 80

JANUARY 12, 1980 (P=-2.88, B_o=-4.20, L_o=160.33)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E NO DATA W

Sp

Np MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E W

Levels
± 5
± 10
± 20
± 40
± 80

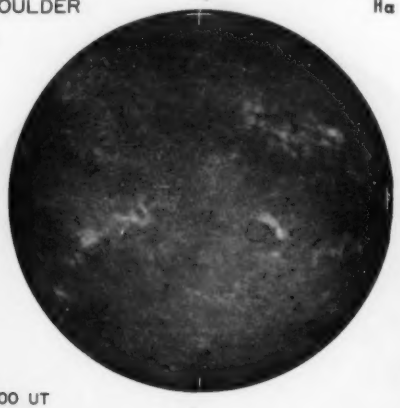
Sp

12
BOULDER Np Hα

BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

12

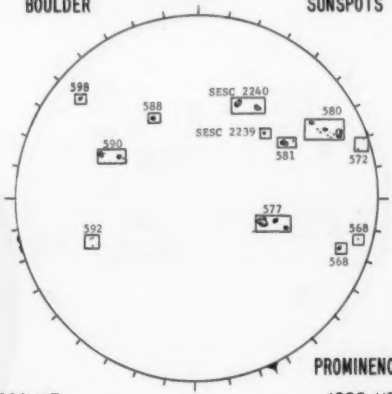
BOULDER Np Hα



E W

1600 UT Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



E W E

1600 UT Sp

PROMINENCES

1600 UT

Np CALCIUM REPORT

W

Sp

Np

STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

Levels

0 μT

± 50

±100

±200

• • •

Sp

W

73 Jan 80

JANUARY 13, 1980 (P=-3.36, B_o=-4.30, L_o=147.16)

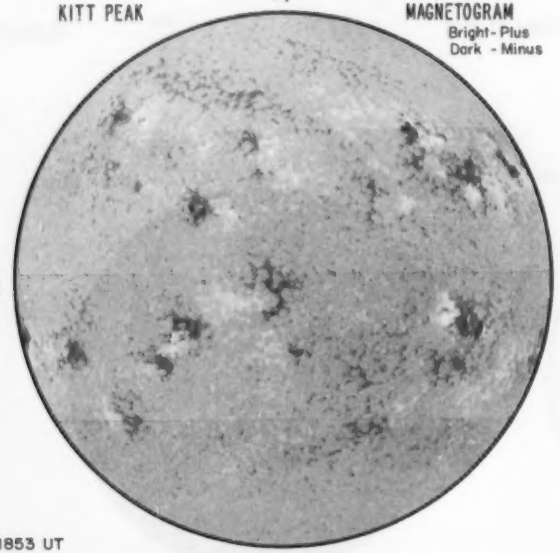
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



E W

1853 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

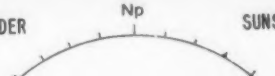
E W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

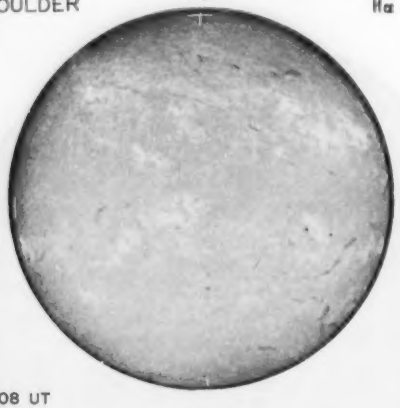
13
BOULDER Np Hα

BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT



13

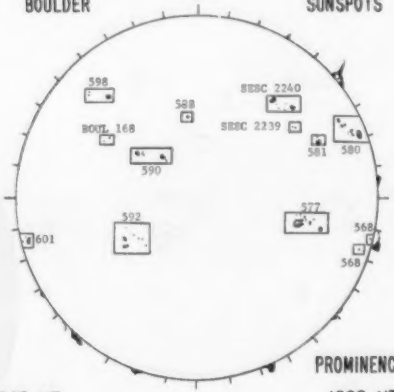
BOULDER Np Hα



E W

1608 UT Sp

BOULDER Np SUNSPOTS



E W E

1645 UT Sp

HALE OBSERVATORIES Np

PROMINENCES

1608 UT Sp

CALCIUM REPORT

E W

Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

SCHEDULE

E W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

SCHEDULE

E W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

E W

Sp

75

Jan 80

JANUARY 14, 1980 (P =-3.84, B_o =-4.40, L_o =133.99)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E W

1538 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E W

1755 UT

Sp

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

E W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

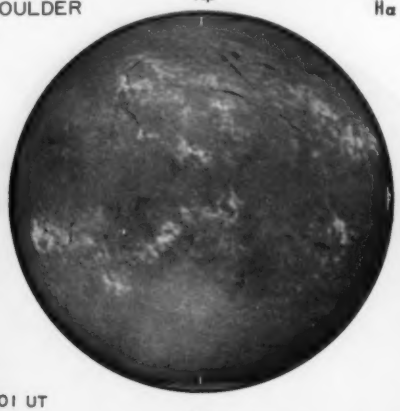
14

BOULDER Np Hα

BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

14

BOULDER Np Hα

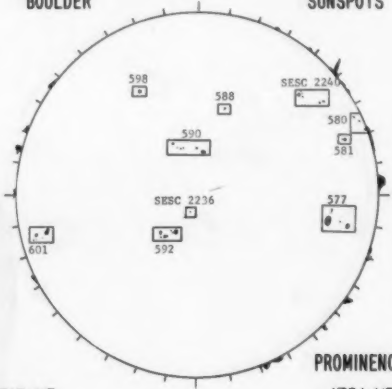


E W

1701 UT

Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



E W E W E

1710 UT

Sp

Np CALCIUM REPORT

PROMINENCES

1701 UT

W

Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W E

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

WEATHER W E

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

W

77 Jan 80

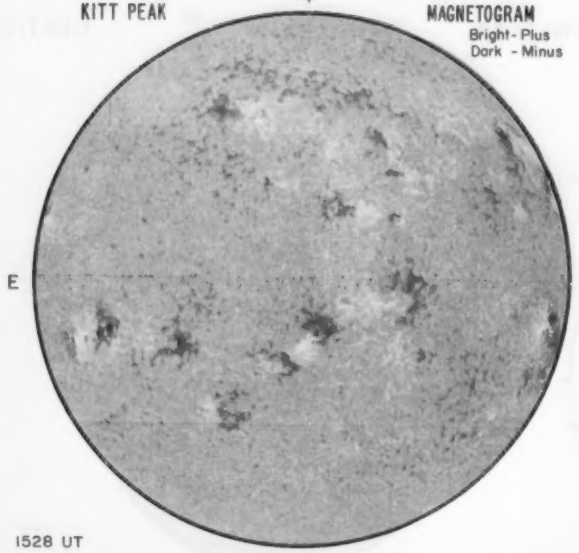
JANUARY 15, 1980 (P=-4.31, B_o=-4.51, L_o=120.82)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



E W

1528 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

Np

E W

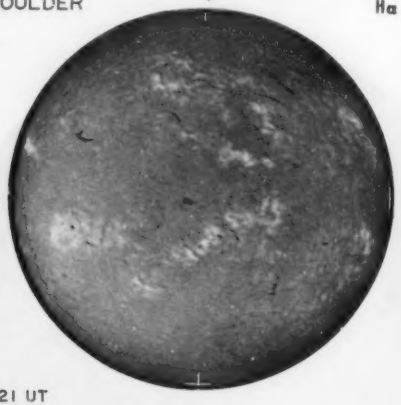
Sp

Levels
± 5
± 10
± 20
± 40
± 80

15
BOULDER Np Hα

BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

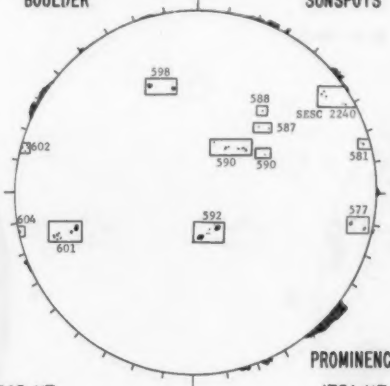
BOULDER Np Hα



E W

1721 UT Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



E W E

1745 UT Sp

PROMINENCES

1721 UT Sp

Np CALCIUM REPORT

W

Sp

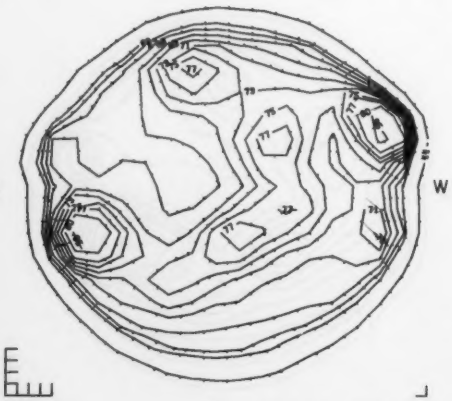
Np STANFORD

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

NOSC LA POSTA Np 2.0 CM



E W

1930 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

CLOUDY

E W

---- UT Sp Ant. Temp. Unit 100° K

Levels

0 μT

± 50

±100

±200

Sp

W

79 Jan 80

JANUARY 16, 1980 (P=-4.78, B_o=-4.61, L_o=107.66)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright-Plus
Dark -Minus

E W

1553 UT

Sp

Np

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.4

E W

Levels
± 5
± 10
± 20
± 40
± 80

16.65-18.18 UT

Sp

16

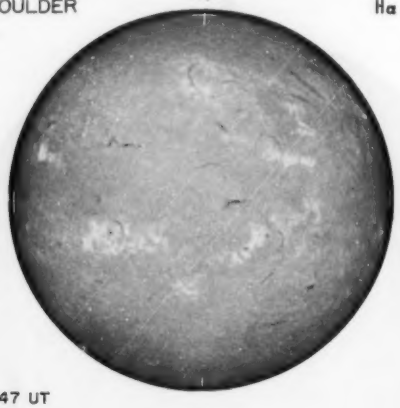
BOULDER Np Hα

BOULDER Np SUNSPOTS

HALE OBSERVATORIES Np CALCIUM REPORT

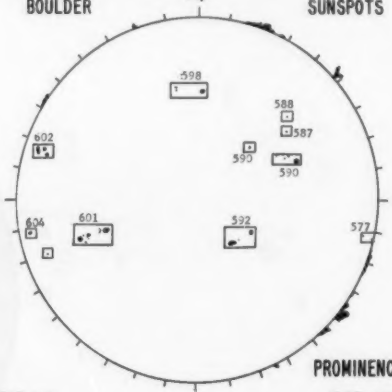
16

BOULDER Np Hα



1847 UT Sp

BOULDER Np SUNSPOTS



1515 UT Sp

PROMINENCES

1847 UT

HALE OBSERVATORIES Np CALCIUM REPORT

1748 UT Sp

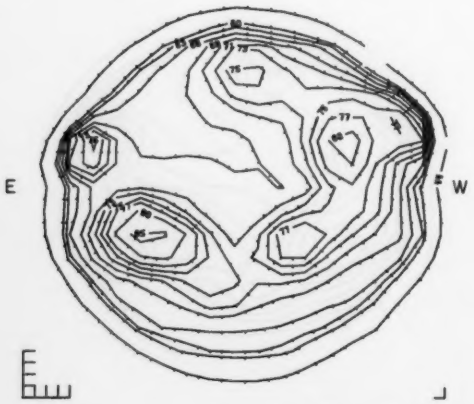
	FAIR	JA
77-	1000	3.0
85-	1500	2.5
87-	0300	2.5
88-	0300	2.5
89-	0500	3.0
90-	1200	3.0
91-	0900	2.5
92-	1200	3.5
93-	0300	3.0
98-	1700	3.0
99-	0300	2.5
00-	1300	3.0
01-	3200	4.0
02-	1500	3.0

Np

STANFORD

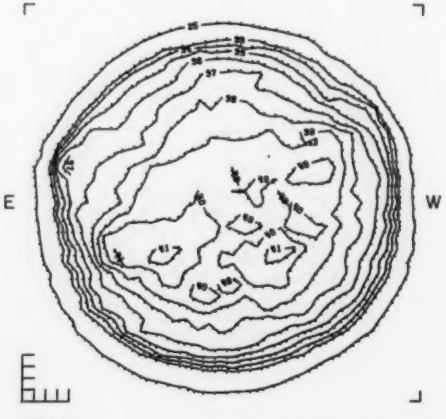
MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

NOSC LA POSTA Np 2.0 CM



1917 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM



1821 UT Sp Ant. Temp. Unit 100° K

Levels
0 μT
± 50
±100
±200
• • •

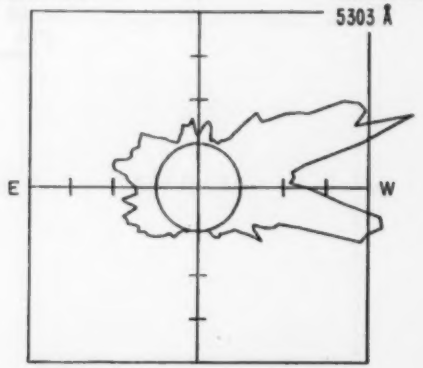
E W

Sp

81 Jan 80

JANUARY 17, 1980 (P =-5.25, B_o =-4.70, L_o = 94.49)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

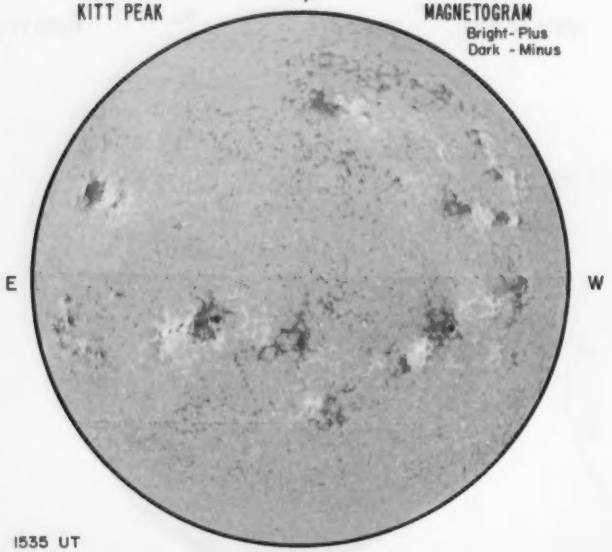


1528 UT

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1535 UT

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA 17-19 JAN W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

17

BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

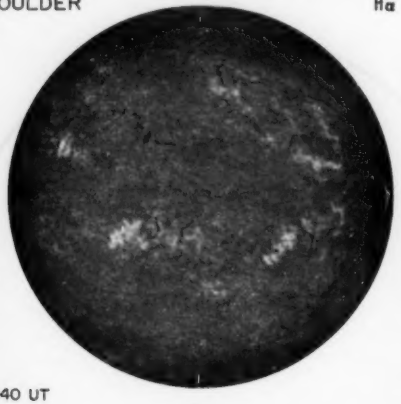
Sp

17

BOULDER

Np

Hα



E

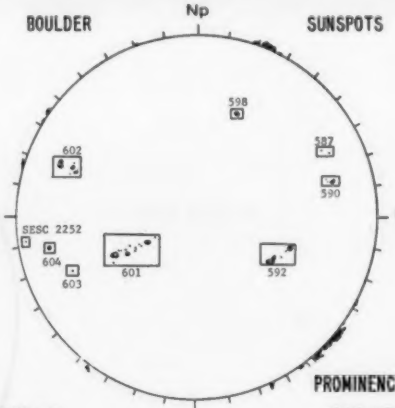
W

1540 UT

Sp

BOULDER

Np



E

W

1500 UT

Sp

SUNSPOTS

HALE OBSERVATORIES

Np

PROMINENCES

E

W

1540 UT

Sp

CALCIUM REPORT

NO DATA 17-19 JAN

Np

E

W

Sp

STANFORD

Np

MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E

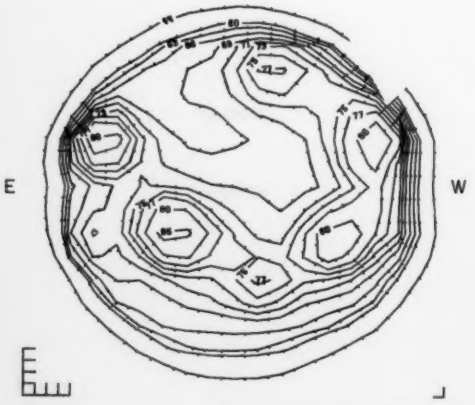
W

Sp

NOSC LA POSTA

Np

2.0 CM



E

W

1850 UT

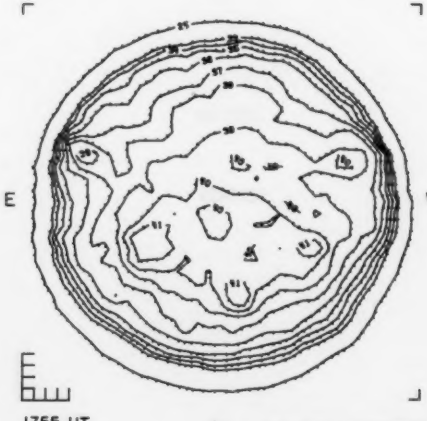
Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA

Np

8.6 MM



E

W

1755 UT

Sp

Ant. Temp. Unit 100° K

Levels

0 μT

± 50

±100

±200

•

•

•

Sp

83

Jan 80

JANUARY 18, 1980 (P = -5.71, B_o = -4.80, L_o = 81.32)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

Np
MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

KITT PEAK Np MAGNETOGRAM
Bright-Plus
Dark - Minus

E NO DATA W

Sp

E W

Sp

Levels
± 5
± 10
± 20
± 40
± 80

18

BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

BOULDER Np Hα

E NO DATA W

Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

E NO DATA W E W

PROMINENCES

Sp Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E W

Levels

0 μT

± 50

±100

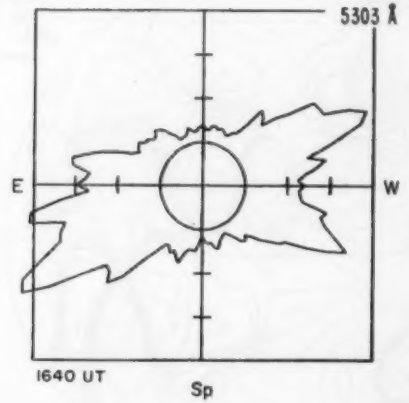
±200

Sp 2101 UT

85 Jan 80

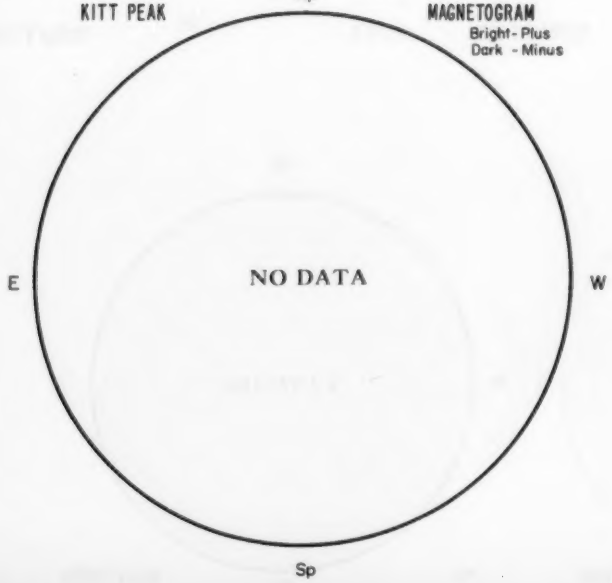
JANUARY 19, 1980 (P =-6.17, B_o =-4.90, L_o = 68.15)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

BOULDER Np Hα

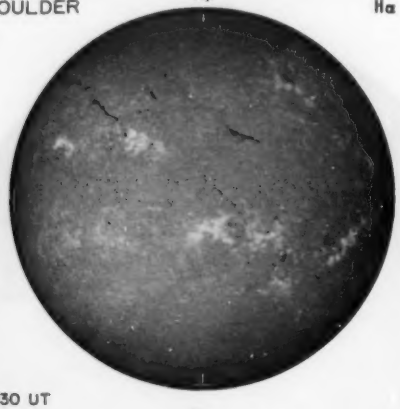
BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

Sp

19

BOULDER Np Hα

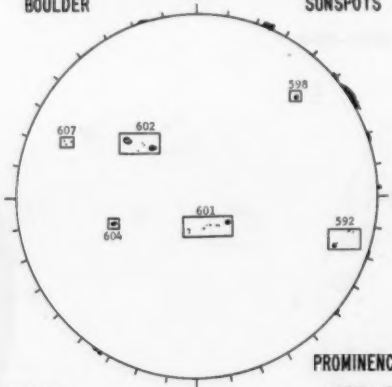


E W

1630 UT

Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



E W E

1545 UT

Sp

Np CALCIUM REPORT

W

PROMINENCES

1630 UT

Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

SCHEDULE

E W

---- UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

SCHEDULE

E W

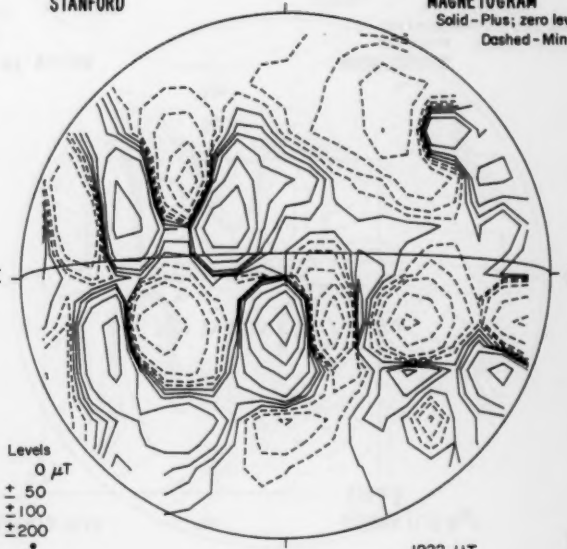
---- UT

Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

•

•

•

1922 UT

Sp

87

Jan 80

JANUARY 20, 1980 (P = -6.63, B_o = -4.99, L_o = 54.99)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E W

1854 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.7
DELTAX = 9.8

E W

Levels
± 5
± 10
± 20
± 40
± 80

19.08 - 20.03 UT

Sp

20

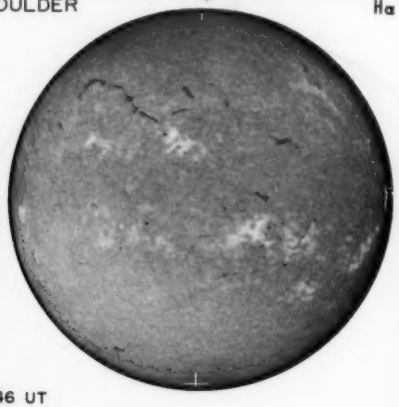
BOULDER Np Hα

BOULDER Np SUNSPOTS

HALE OBSERVATORIES Np CALCIUM REPORT

20

BOULDER Np Hα

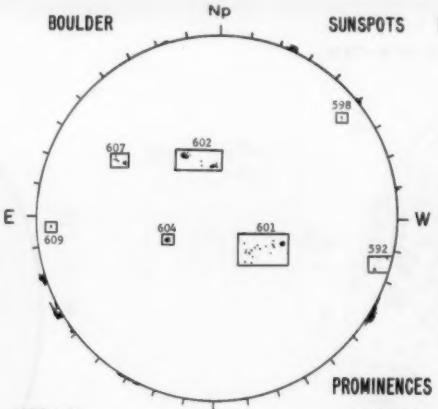


E W

1646 UT

Sp

BOULDER Np SUNSPOTS



E W

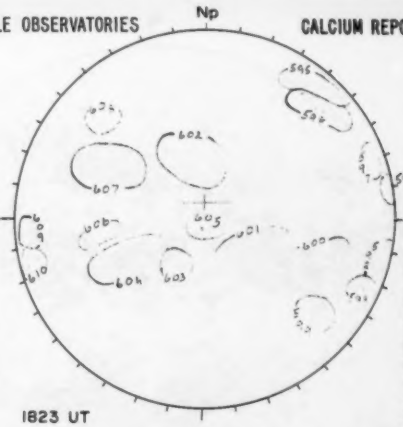
1622 UT

Sp

PROMINENCES

1646 UT

HALE OBSERVATORIES Np CALCIUM REPORT



E W

1823 UT

Sp

FAIR	JA
90- 0900-3.0	
92- 1700-3.5	
93- 0800-3.0	
98- 1500-3.5	
99- 0700-3.0	
00- 1000-3.0	
01- 4000-4.0	
02- 3300-3.5	
03- 0400-3.0	
04- 1900-3.5	
07- 2700-4.0	
08- 0300-3.0	
09- 1200-3.0	

NOSC LA POSTA Np 2.0 CM

NO DATA

E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

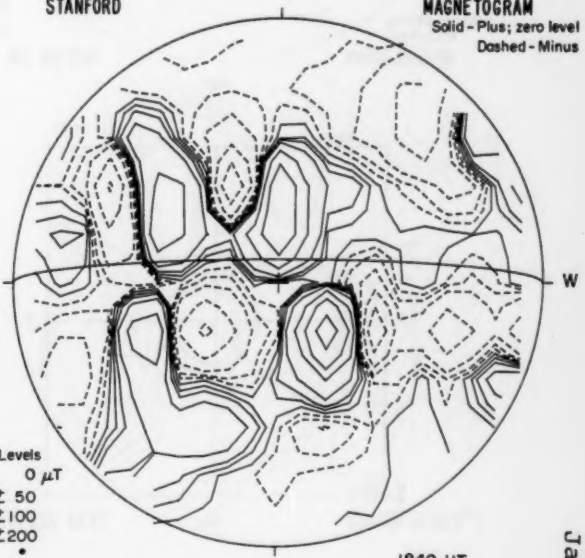
E SCHEDULE W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

•

•

•

1840 UT

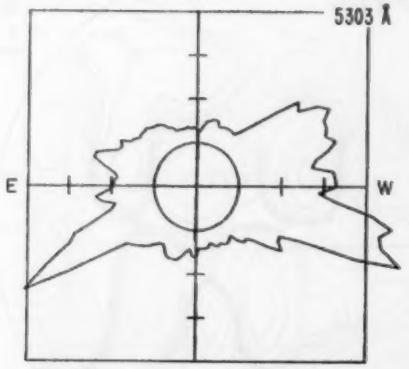
Sp

89

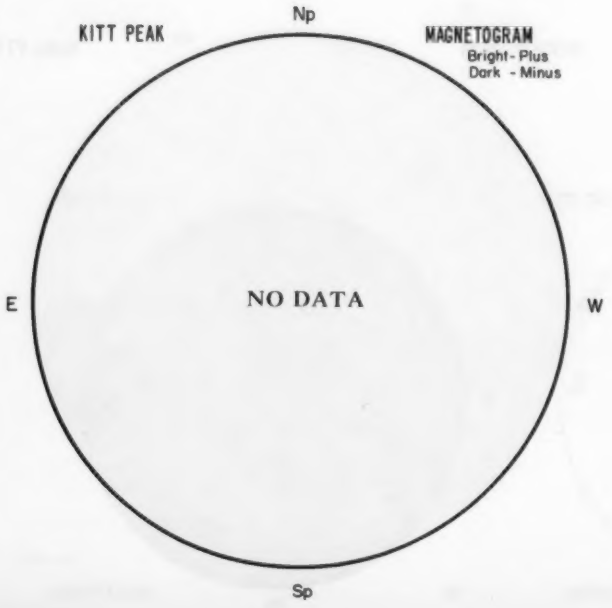
Jan 80

JANUARY 21, 1980 (P =-7.09, B_o =-5.08, L_o =41.82)

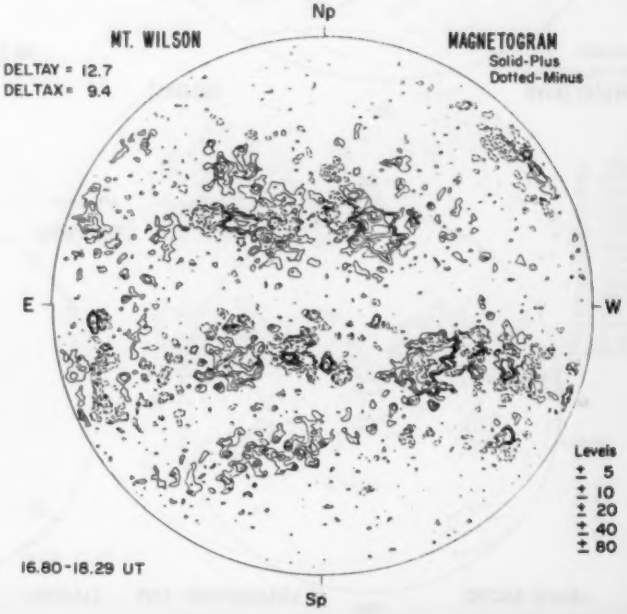
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



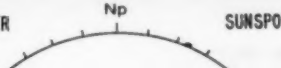
MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.4



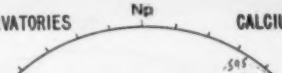
16.80-18.29 UT

21
BOULDER Np Hα

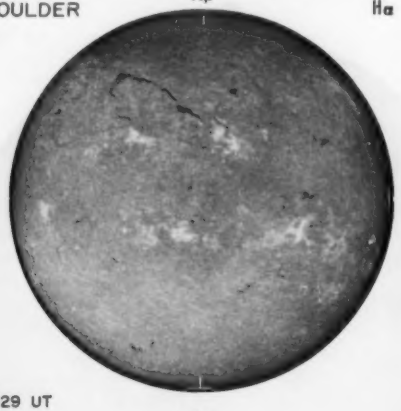
BOULDER Np SUNSPOTS



HALE OBSERVATORIES Np CALCIUM REPORT



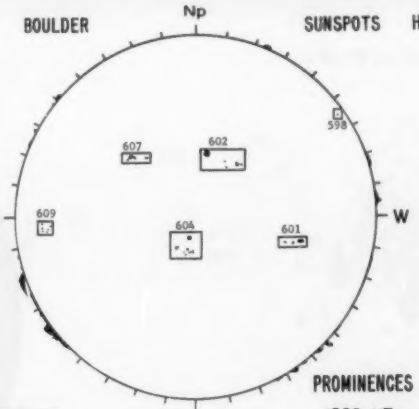
BOULDER Np Hα



E W

1829 UT Sp

BOULDER Np SUNSPOTS



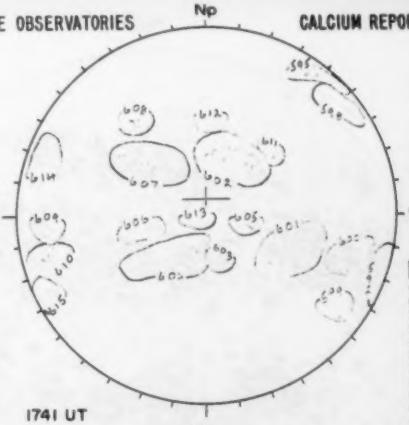
E W

1805 UT Sp

PROMINENCES

1829 UT

HALE OBSERVATORIES Np CALCIUM REPORT

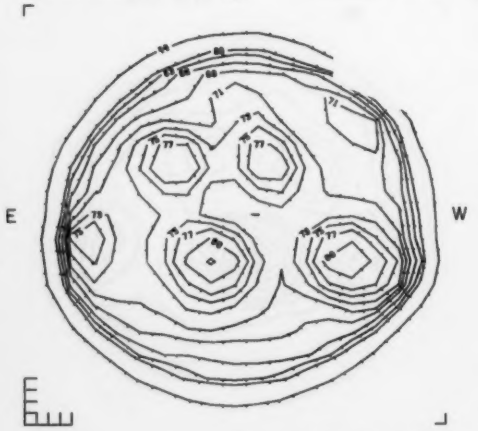


E W

1741 UT Sp

POOR	JA
92- 1400-3.0	
98- 1000-3.0	
99- 0500-3.0	
00- 0800-3.0	
01- 3300-3.5	
02- 3800-3.5	
03- 0400-3.0	
04- 2700-3.5	
06- 0300-2.5	
07- 2300-3.5	
08- 0300-2.5	
09- 1200-4.0	
11- 0200-2.5	
13- 0100-2.5	
15- 0800-2.5	

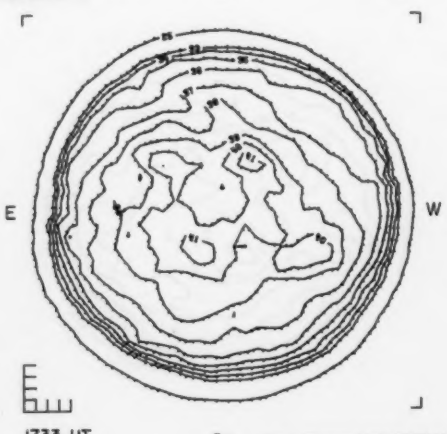
NOSC LA POSTA Np 2.0 CM



E W

1829 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

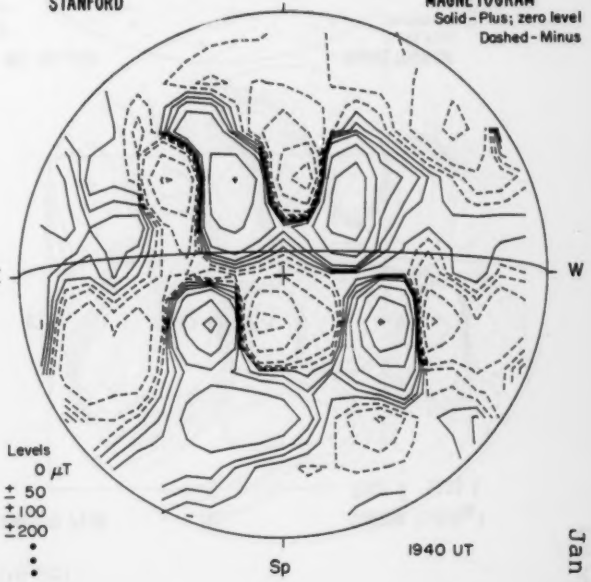


E W

1733 UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



E W

Levels
0 μT
± 50
±100
±200
• • •

1940 UT Sp

91
Jan 80

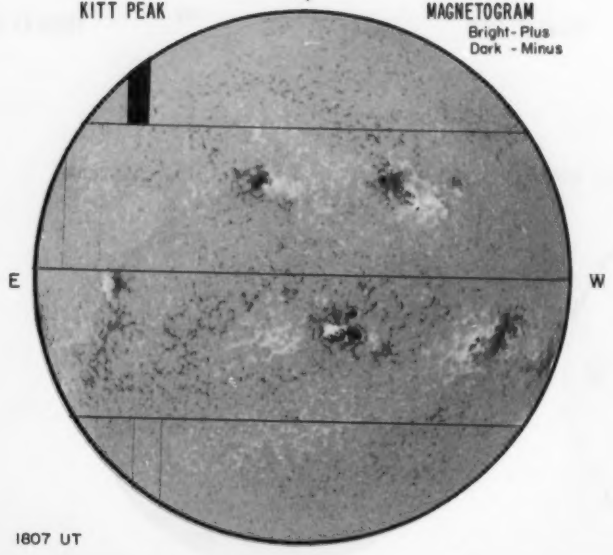
JANUARY 22, 1980 (P=-7.54, B_o=-5.18, L_o=28.65)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å 5303 Å

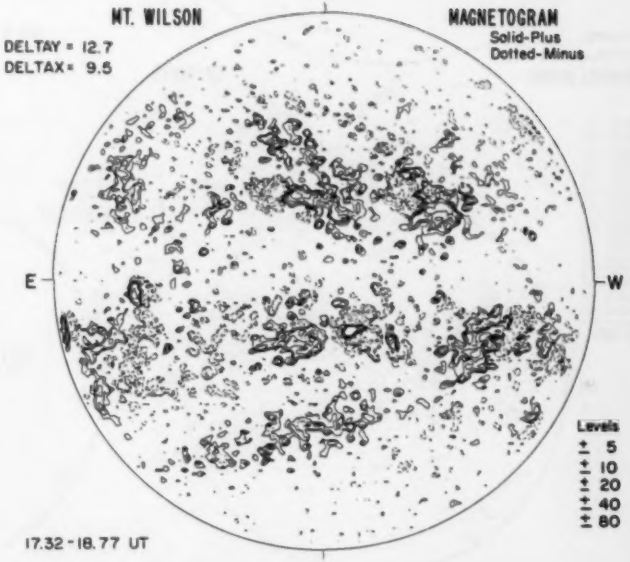
E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright-Plus
Dark - Minus

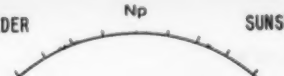


MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.7
DELTAX = 9.5

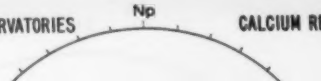


22
BOULDER Np Hα

BOULDER Np SUNSPOTS

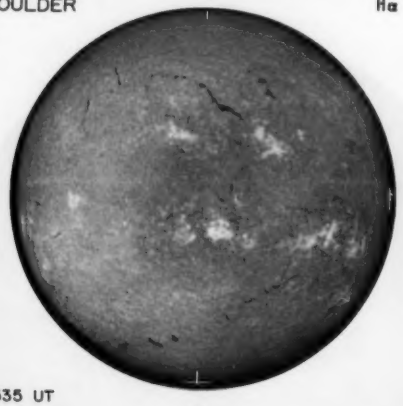


HALE OBSERVATORIES Np CALCIUM REPORT



22

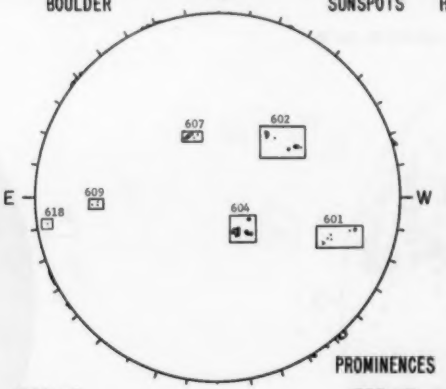
BOULDER Np Hα



E W

1535 UT Sp

BOULDER Np SUNSPOTS



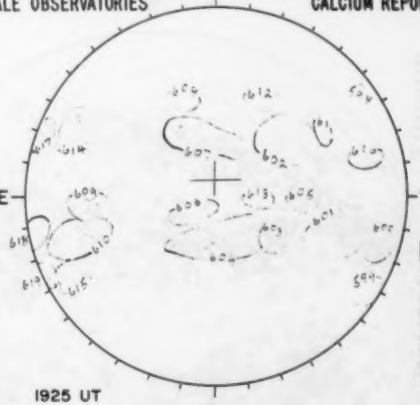
E W

1530 UT Sp

PROMINENCES

1535 UT

HALE OBSERVATORIES Np CALCIUM REPORT

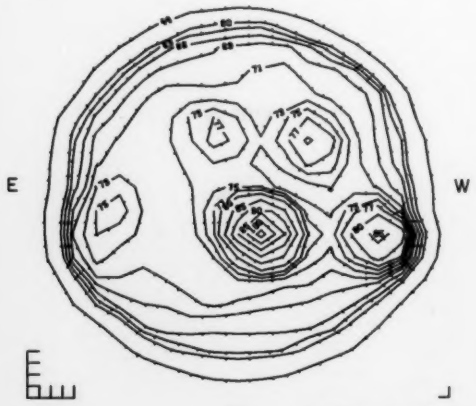


E W

1925 UT Sp

POOR	JA
98- 0900-2.5	
99- 0300-2.5	
00- 0700-3.0	
01- 3800-3.0	
02- 3500-3.0	
04- 2600-3.5	
07- 2400-3.0	
08- 0200-3.0	
09- 1200-4.0	
10- 1500-2.5	
11- 0200-2.5	
15- 0800-3.0	
16- 0100-2.5	
18- 1200-3.0	

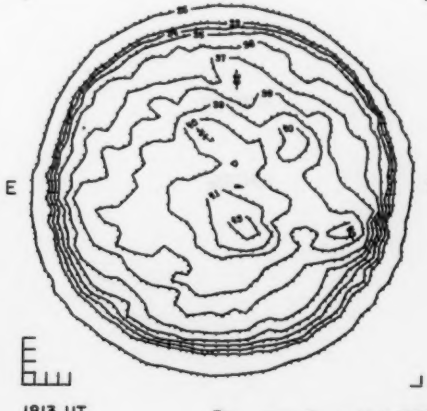
NOSC LA POSTA Np 2.0 CM



E W

1909 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM



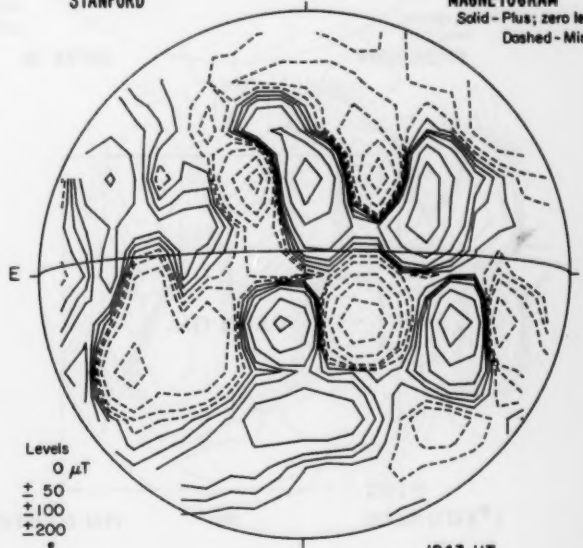
E W

1813 UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

1843 UT Sp

93

Jan 80

JANUARY 23, 1980 (P = -7.99, B_o = -5.27, L_o = 15.49)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E W

1601 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.7
DELTAX = 9.5

E W

Levels
±1 5
±1 10
±1 20
±1 40
±1 80

16.79 - 18.24 UT

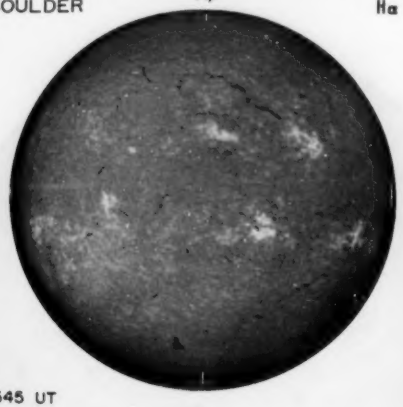
Sp

23
BOULDER Np Hα

BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

23

BOULDER Np Hα

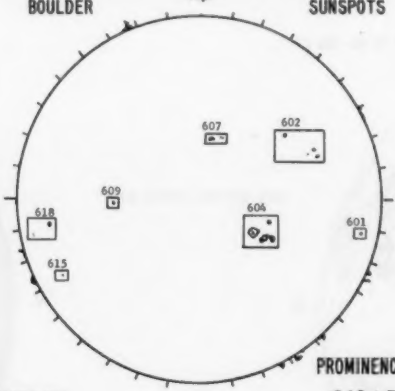


E W

1545 UT

Sp

BOULDER Np SUNSPOTS



E W

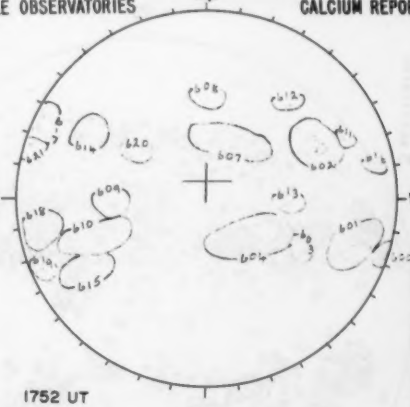
1600 UT

Sp

PROMINENCES

1545 UT

HALE OBSERVATORIES Np CALCIUM REPORT



E W

1752 UT

Sp

V POOR	JA

01- 2200-2.5
02- 2100-3.0
04- 2100-4.0
07- 2200-3.0
08- 0200-2.5
09- 1100-3.0
15- 0500-2.5
17- 0700-2.5
18- 1000-3.0
19- 0300-2.5
20- 0200-3.0
21- 0100-2.5

NOSC LA POSTA Np 2.0 CM

NO DATA

E W

WEATHER

---- UT

Sp

Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E W

WEATHER

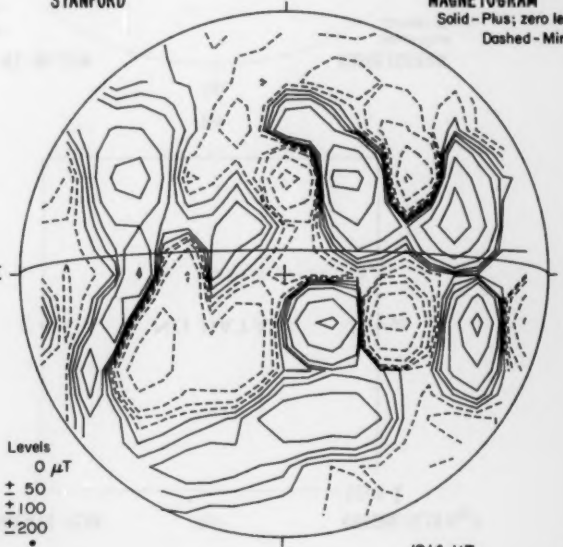
---- UT

Sp

Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level
Dashed - Minus



E W

Levels
0 μT
± 50
±100
±200
•
•
•

Sp

1914 UT

95
Jan 80

JANUARY 24, 1980 (P=-8.44, B_o=-5.35, L_o=2.32)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

KITT PEAK Np MAGNETOGRAM
Bright-Plus
Dark - Minus

E W

1835 UT

Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY = 12.7
DELTAX = 9.5

E W

Levels
± 5
± 10
± 20
± 40
± 80

17.86-19.31 UT

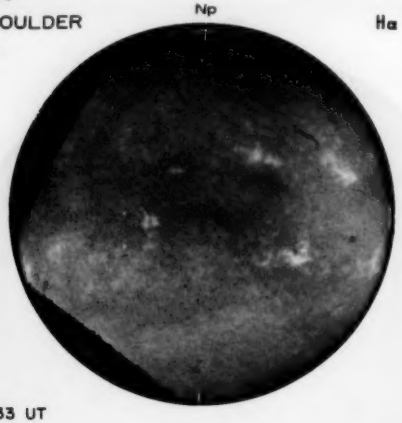
Sp

24

BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

24

BOULDER Np Hα



E W E

1733 UT

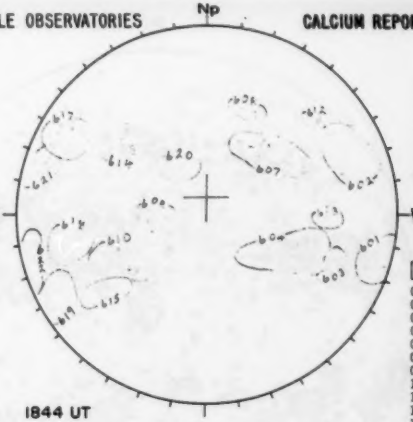
Sp

BOULDER Np

NO DATA 24-28 JAN

Sp

SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT



W E W

PROMINENCES

1844 UT

Sp

FAIR	JA
01- 1900-3.5	
02- 4200-3.5	
03- 0300-2.5	
04- 3500-4.0	
07- 2200-3.0	
08- 0200-2.5	
09- 1000-3.5	
10- 1400-2.5	
14- 0500-2.5	
15- 0500-2.5	
17- 0800-3.0	
18- 1800-3.5	
19- 0800-2.5	
20- 0500-3.0	
22- 1400-4.0	

Np

STANFORD

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

NO DATA 24-28 JAN

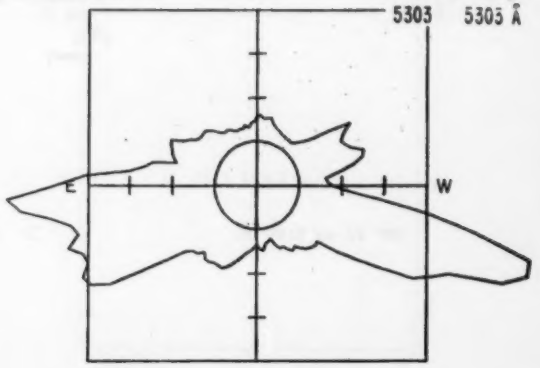
Levels
0 μT
± 50
±100
±200

Sp

97
Jan 80

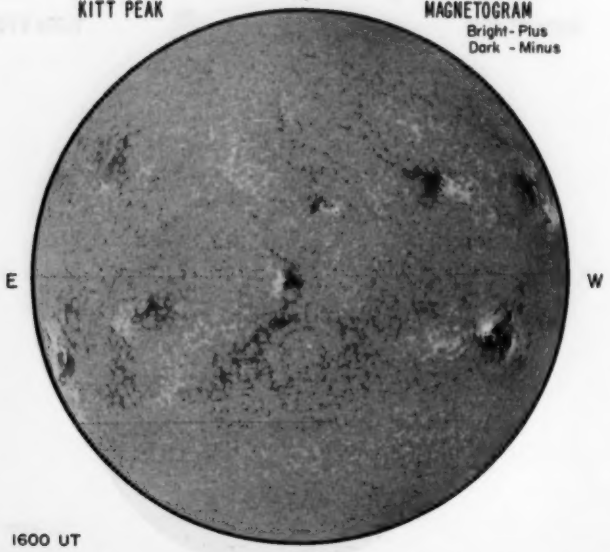
JANUARY 25, 1980 (P=-8.88, B_o=-5.44, L_o=349.16)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 5303 Å



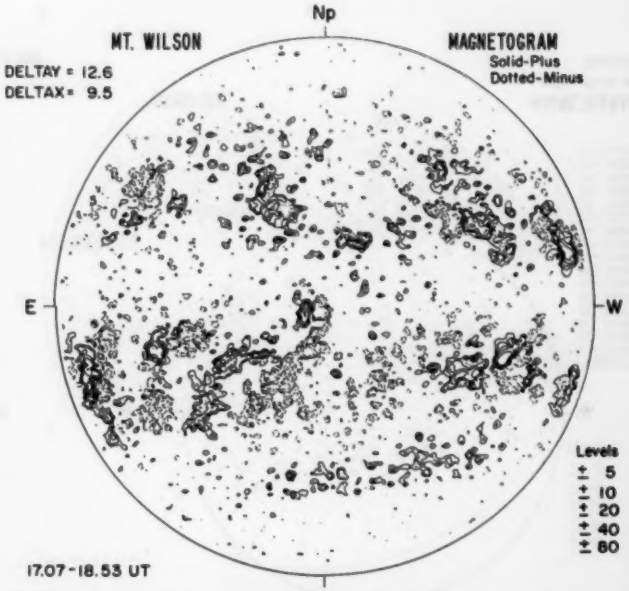
2039 UT Sp

KITT PEAK Np MAGNETOGRAM
Bright-Plus
Dark -Minus



1600 UT Sp

MT. WILSON Np MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY = 12.6
DELTAX= 9.5



17.07-18.53 UT Sp

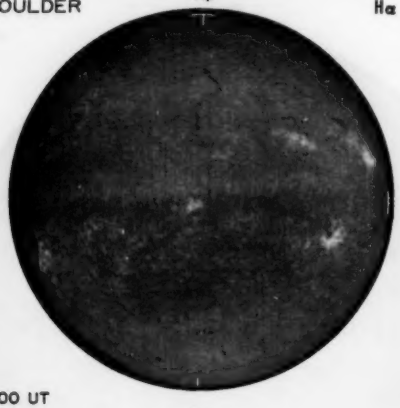
25
BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

Sp

25

BOULDER Np Hα



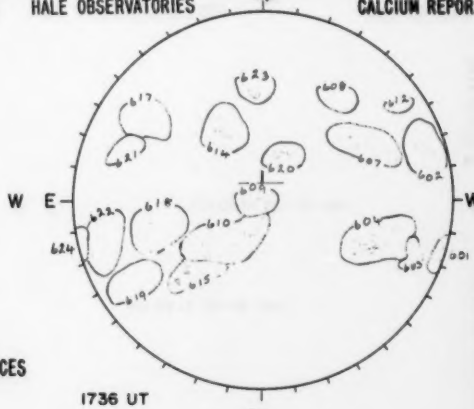
1700 UT

Sp

BOULDER Np

Sp

SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT



GOOD	JA
01- 0900-2.5	
02- 3200-3.5	
04- 3500-4.0	
07- 2200-3.5	
08- 0200-2.5	
09- 1000-3.5	
10- 1200-3.0	
14- 0700-2.5	
15- 0400-3.0	
17- 1000-3.0	
18- 1900-3.5	
19- 0900-2.5	
20- 0600-3.5	
21- 0300-2.5	
22- 3100-4.0	
24- 0500-2.5	

PROMINENCES

1736 UT

Sp

Np

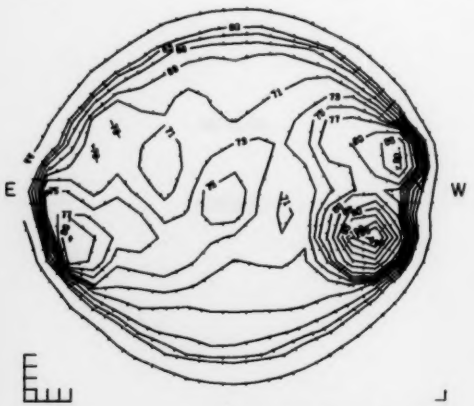
STANFORD

MAGNETOGRAM

Solid - Plus; zero level

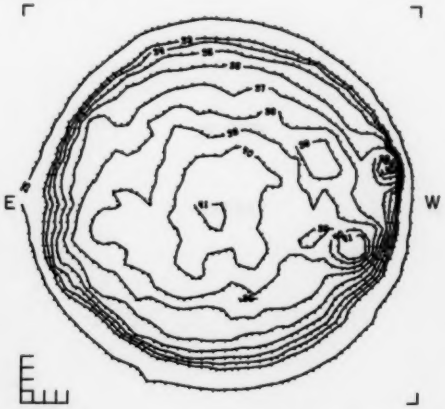
Dashed - Minus

NOSC LA POSTA Np 2.0 CM

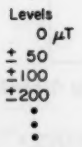


1744 UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM



1647 UT Sp Ant. Temp. Unit 100° K



W

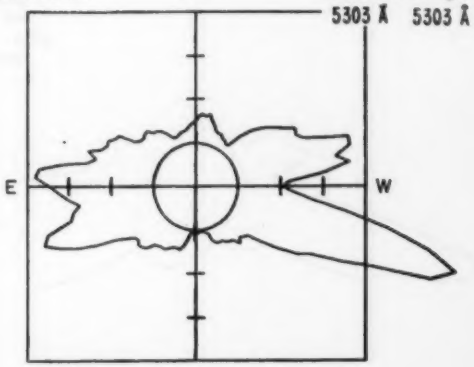
Sp

99

Jan 80

JANUARY 26, 1980 (P = -9.32, B_o = -5.52, L_o = 335.99)

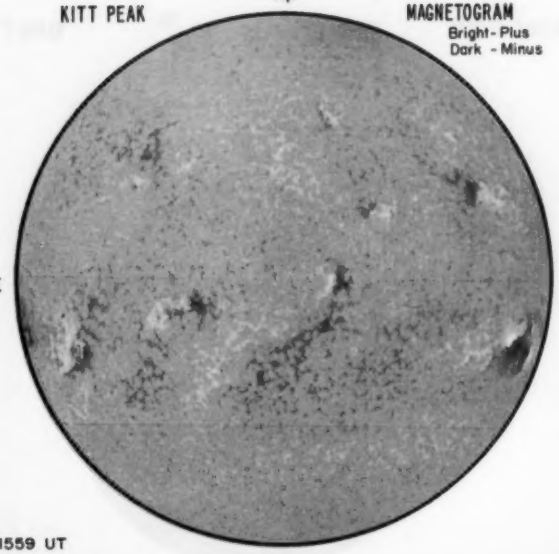
SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å 5303 Å



2216 UT Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



1559 UT Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E NO DATA 26-31 JAN W

Levels
± 5
± 10
± 20
± 40
± 80

Sp

26
BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

26

BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

E W E W E NO DATA 26-31 JAN W

Sp Sp Sp

PROMINENCES

Np

STANFORD

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

NOSC LA POSTA Np 2.0 CM NOSC LA POSTA Np 8.6 MM

NO DATA NO DATA

E SCHEDULE W E SCHEDULE W E W

---- UT Sp Ant. Temp. Unit 100° K ---- UT Sp Ant. Temp. Unit 100° K

Levels
0 μT
± 50
±100
±200

Sp

101
Jan 80

JANUARY 27, 1980 (P=-9.76, B_o=-5.61, L_o=322.82)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)

5303 Å

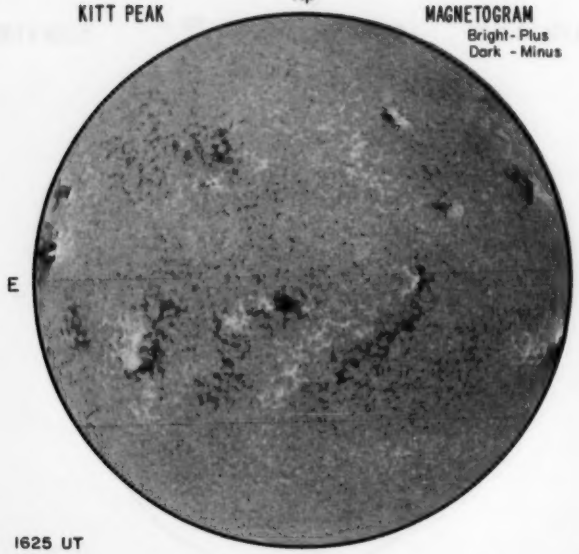
E NO DATA W

Sp

Np

KITT PEAK Np MAGNETOGRAM

Bright - Plus
Dark - Minus



E W

1625 UT

Sp

MT. WILSON MAGNETOGRAM

Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E W

Levels
± 5
± ± 10
± ± ± 20
± ± ± ± 40
± ± ± ± ± 80

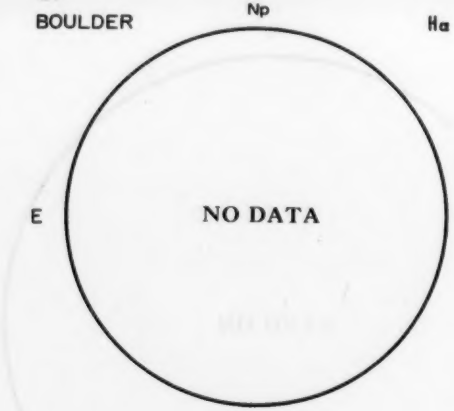
Sp

27

BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

27

BOULDER Np Hα



BOULDER Np

E W E

Sp

SUNSPOTS HALE OBSERVATORIES Np

W E

PROMINENCES

Sp

CALCIUM REPORT

W

STANFORD Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

W

NOSC LA POSTA Np 2.0 CM

NO DATA

E W

SCHEDULE

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E W

SCHEDULE

---- UT Sp Ant. Temp. Unit 100° K

Levels
0 μT
± 50
± 100
± 200
• • •

Sp

103
Jan 80

JANUARY 28, 1980 (P=-10.19, B_o=-5.69, L_o=309.66)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright-Plus
Dark - Minus

E NO DATA W

Sp

MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus
DELTAY =
DELTAX =

E W

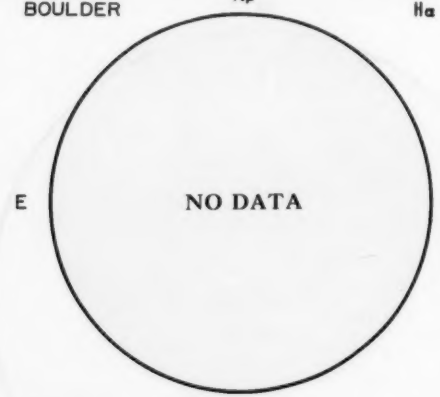
Sp

Levels
± 5
± 10
± 20
± 40
± 80

28
BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

28

BOULDER Np Hα



BOULDER Np

E W

SUNSPOTS HALE OBSERVATORIES Np

E W

CALCIUM REPORT

W

PROMINENCES

Sp Sp Sp

STANFORD Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

Levels
0 μT
± 50
±100
±200

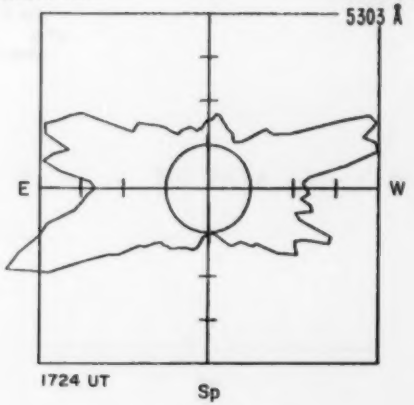
Sp

W

105
Jan 80

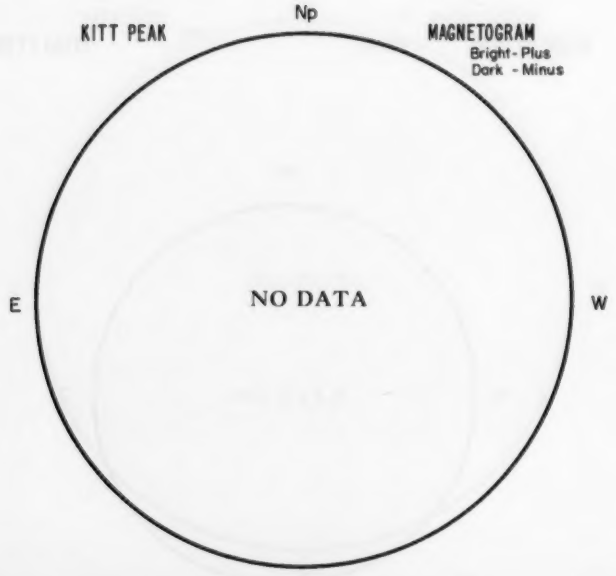
JANUARY 29, 1980 (P=-10.61, B_o=-5.77, L_o=296.49)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å



Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid-Plus
Dotted-Minus

DELTAY =
DELTAX =

E W

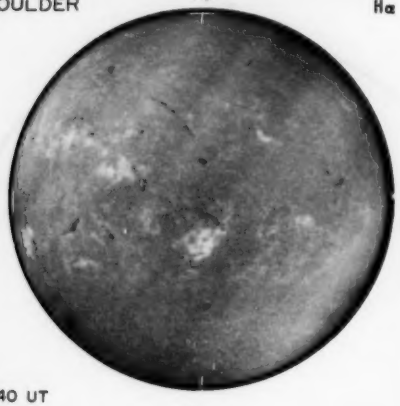
Sp

Levels
5
10
20
40
80

29
BOULDER Np Hα BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

29

BOULDER Np Hα

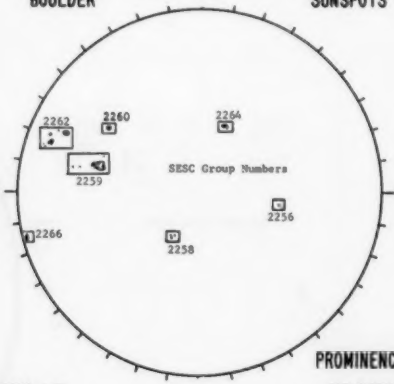


E W

1640 UT

Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES



E W E W

1630 UT

Sp

PROMINENCES

NO DATA

Sp

Np CALCIUM REPORT

E W

Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W

---- UT

Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E WEATHER W

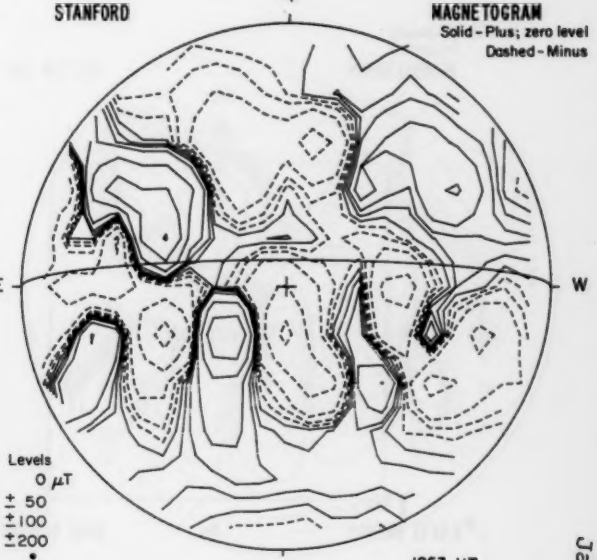
---- UT

Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus



E W

Levels

0 μT

± 50

±100

±200

1853 UT

Sp

107

Jan 80

JANUARY 30, 1980 (P = -11.04, B_o = -5.84, L_o = 283.32)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E NO DATA W

Sp

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

E W

Sp

Levels
± 5
± 10
± 20
± 40
± 80

30

BOULDER Np Hα

BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

Sp

Sp

30

BOULDER Np Hα

E NO DATA W

Sp

BOULDER Np SUNSPOTS HALE OBSERVATORIES

2265 2262 2260 2264 2267 2259 2266

SESC Group Numbers

E W E

1623 UT Sp PROMINENCES 1640 UT

Np CALCIUM REPORT

W

Sp

NOSC LA POSTA Np 2.0 CM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

NOSC LA POSTA Np 8.6 MM

NO DATA

E WEATHER W

---- UT Sp Ant. Temp. Unit 100° K

STANFORD Np MAGNETOGRAM

Solid - Plus; zero level

Dashed - Minus

E W

Levels

0 μT

± 50

±100

±200

Sp 1934 UT

109

Jan 80

JANUARY 31, 1980 (P=-11.46, B_o=-5.92, L_o=270.16)

SACRAMENTO PEAK Np CORONA (1.15 $R_\odot$)
5303 Å

E NO DATA W

Sp

Np

KITT PEAK Np MAGNETOGRAM
Bright - Plus
Dark - Minus

E NO DATA W

Sp

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

E W

Sp

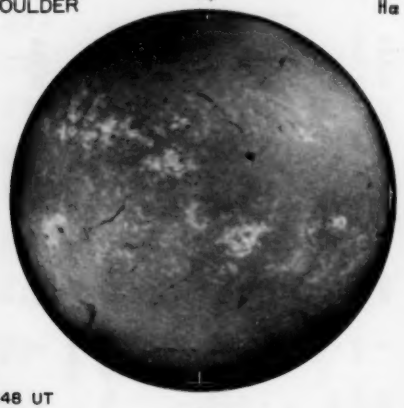
Levels
± 5
± 10
± 20
± 40
± 80

31

BOULDER Np Hα

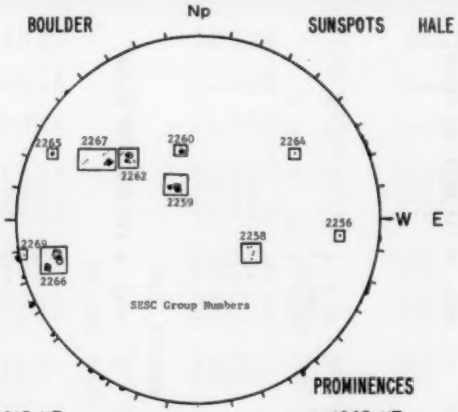
BOULDER Np SUNSPOTS HALE OBSERVATORIES Np CALCIUM REPORT

BOULDER Np Hα



1648 UT

BOULDER Np SUNSPOTS HALE OBSERVATORIES



1615 UT

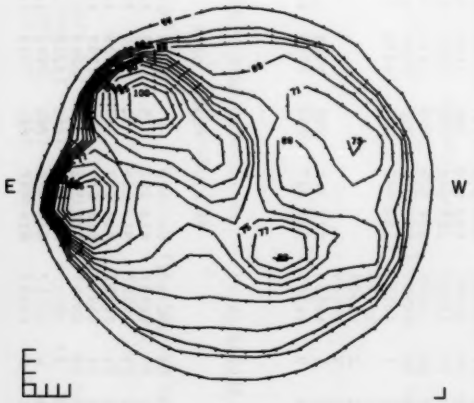
PROMINENCES

1648 UT

Np CALCIUM REPORT

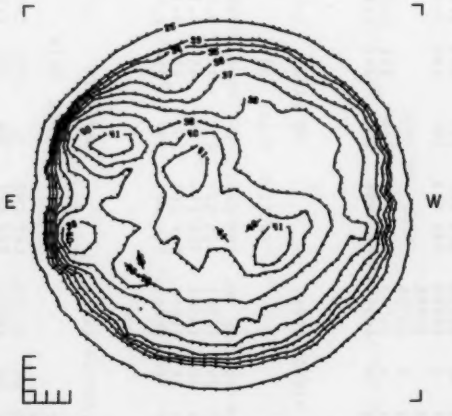
E W Sp

NOSC LA POSTA Np 2.0 CM



1852 UT Ant. Temp. Unit 100° K

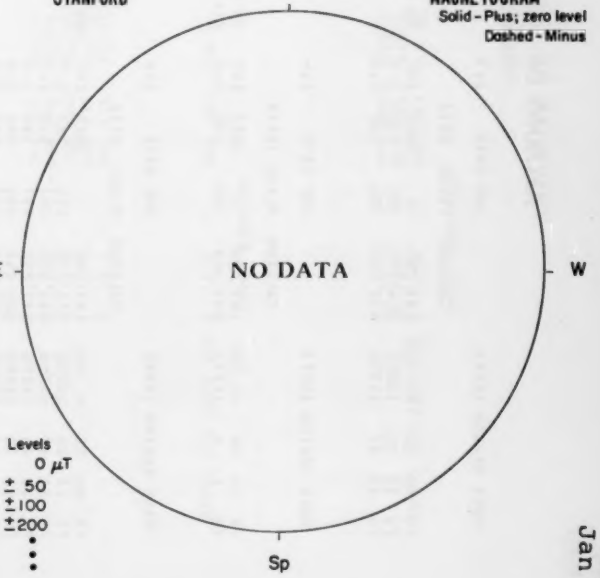
NOSC LA POSTA Np 8.6 MM



1750 UT Ant. Temp. Unit 100° K

STANFORD Np

MAGNETOGRAM
Solid - Plus; zero level
Dashed - Minus



Levels
0 μT
± 50
±100
±200

REGIONS OF SOLAR ACTIVITY

JANUARY 1980

HALE REGION 16554 CMP DATE 1.3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	12	26	16554	N14 E78	304	100	1.5									
79	12	27	16554	N13 E60	301	100	2.0									

HALE REGION 16573 CMP DATE 1.4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	4	16573	S05 W45	299	100	2.0	21186	S05 W42	298	(AF)	2				

HALE REGION 16556 CMP DATE 1.6 RETURN OF REGION 16466 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	12	26	16556	N21 E78	296	300	1.5									
79	12	27	16556	N21 E68	293	500	2.5									
79	12	28	16556	N21 E58	297	300	2.5									
79	12	29	16556	N21 E46	294	300	3.0									
79	12	30	16556	N21 E25	295	500	2.5									
79	12	31	16556	N21 E09	297	600	2.5									
80	1	1	16556	N21 W03	297	400	3.0	21179	N22 W01		(B)	1	B	0	2	B
80	1		16556					21171	N12 E09		(AP)	3				
80	1	2	16556					21179	N22 W16		(AF)	3	B	0	1	A
80	1	4	16556	N21 W40	294	700	2.5									
80	1	5	16556	N22 W54	294	800	2.5									

HALE REGION 16561 CMP DATE 1.6

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	12	29	16561	S18 E39	295	100	3.0									
79	12	30	16561	S16 E24	296	400	3.0									
79	12	31	16561	S17 E08	298	400	3.0									
80	1	1	16561	S15 W03	297	200	2.5									

HALE REGION 16555 CMP DATE 1.7 RETURN OF REGION 16465 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	12	26	16555	S23 E70	304	300	1.5									
79	12	27	16555	S23 E64	297	1400	2.0									
79	12	28	16555	S23 E52	295	1400	2.5		S14 E60			H		40	1	HRX
79	12	29	16555	S23 E40	294	1000	3.0									
79	12	30	16555	S24 E25	295	2100	3.0									
79	12	31	16555	S23 E11	295	2100	3.0									
80	1	1	16555	S23 W01	295	1300	3.0	21178	S28 W03	299	(B)	2	H	40	5	DSO
80	1		16555					21174	S20 E00		(BP)	3	B	60	10	D
80	1	2	16555					21174	S20 W13		(AP)	2	B	20	1	H
80	1	3	16555					21174	S19 W28		AP	2	B	20	3	B
80	1	4	16555	S22 W41	295	1500	2.5									
80	1	5	16555	S23 W57	297	1700	3.0									

HALE REGION 16557 CMP DATE 2.8 RETURN OF REGION 16483 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
79	12	27	16557	N13 E82	279	600	2.5									
79	12	28	16557	N14 E66	281	700	3.0									
79	12	29	16557	N14 E51	283	500	3.0									
79	12	30	16557	N13 E39	281	1000	2.5									
79	12	31	16557	N13 E23	283	1200	2.5									
80	1	1	16557	N13 E14	280	1200	3.0									
80	1	4	16557	N14 W26	280	800	3.0									
80	1	5	16557	N14 W41	281	900	2.5	21191	N16 W30		(B)	2				

REGIONS OF SOLAR ACTIVITY

JANUARY 1980

HALE REGION 16570 CMP DATE 3.1

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	1	16570	N22 E16	278	100	2.0	21180	N22 E16		(AP)	2			
80	1	2	16570					21180	N22 E04		(B)	2			
80	1	4	16570	N22 W22	276	100	2.5								
80	1	5	16570	N21 W33	273	200	2.0								

HALE REGION 16558 CMP DATE 3.4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	12	27	16558	S17 E85	276	100	2.5								
79	12	28	16558	S14 E78	269	2300	3.0								
79	12	29	16558	S13 E64	270	3400	4.0								
79	12	30	16558	S14 E46	274	3800	3.0								
79	12	31	16558	S15 E33	273	3200	3.5								
80	1	1	16558	S15 E22	272	4000	3.0	21172	S14 E23		(D)	4			
80	1	2	16558					21172	S13 E08		(D)	5			
80	1	3	16558					21172	S13 W07		(D)	4			
80	1	4	16558	S15 W18	272	2500	3.5	21172	S13 W18		(D)	4			
80	1	5	16558	S15 W31	271	3200	3.5	21172	S13 W32		(D)	5			

HALE REGION 16565 CMP DATE 4.2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	12	30	16565	S14 E54	266	1100	3.0								
79	12	31	16565	S14 E42	264	1100	3.0								
80	1	1	16565	S14 E30	264	900	3.0								
80	1	4	16565	S14 W08	262	300	3.0								

HALE REGION 16562 CMP DATE 4.4 RETURN OF PART OF REGION 16476 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	12	29	16562	S26 E72	262	800	3.0								
79	12	30	16562	S26 E60	260	500	3.0								
79	12	31	16562	S27 E47	259	600	3.0								
80	1	1	16562	S27 E34	260	200	2.0								
80	1	4	16562	S25 W05	259	200	2.5								
80	1	5	16562	S25 W21	261	100	2.5								

HALE REGION 16563 CMP DATE 5.1 RETURN OF PART OF REGION 16478 ROTATION 4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	12	29	16563	S10 E80	254	300	2.5								
79	12	30	16563	S12 E68	252	1600	2.0								
79	12	31	16563	S12 E54	252	1800	2.5								
80	1	1	16563	S12 E43	251	1500	2.5								
80	1	4	16563	S12 E04	250	1300	3.0								
80	1	5	16563	S12 W12	252	1200	3.0								

HALE REGION 16564 CMP DATE 5.1 RETURN OF PART OF REGION 16476 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	12	29	16564	S21 E78	256	700	3.5								
79	12	30	16564	S23 E66	254	800	3.0								
79	12	31	16564	S23 E52	254	600	3.0								
80	1	1	16564	S23 E40	254	400	2.5								
80	1	2	16564					21183	S25 E29	253	(BP)	3	P	60 6	CSO
80	1	3	16564					21183	S26 E17	251	(B)	4	R	50 10	ORO
80	1	4	16564	S24 E04	250	1200	3.5	21183	S27 E06	250	(D)	3			
80	1	5	16564	S25 W10	250	1500	3.0	21183	S27 W07	250	(BY)	3			

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HALE REGION 16571 CMP DATE 5.4

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	1	16571	N18 E40	254	400	1.5								
80	1	2	16571					21184	N20 E36		(B)	3			
80	1	3	16571					21184	N19 E20		(B)	3			
80	1	4	16571	N18 E08	246	1800	4.0	21184	N19 E08		(B)	4			
80	1	5	16571	N18 W05	245	1200	3.0	21184	N19 W06		(B)	4			

HALE REGION 16579 CMP DATE 6.0

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	4	16579	N28 E15	239	300	2.5								
80	1	5	16579	N27 E01	239	200	2.0								

HALE REGION 16574 CMP DATE 6.1

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	4	16574	S28 E15	239	400	2.5								
80	1	5	16574	S28 E03	237	200	2.5								
80	1	7	16574						S23 W24			H		10	2 BXO

HALE REGION 16569 CMP DATE 6.2 RETURN OF PART OF REGION 16478 ROTATION 4

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	12	31	16569	S21 E67	239	400	2.5								
80	1	1	16569	S16 E54	240	600	2.0								
80	1	4	16569	S18 E21	233	1400	3.0								
80	1	5	16569	S18 E04	236	1600	3.0	21192	S15 E10	233	(B)	3	B	110	11 DXX
80	1	6	16569						S23 W04				R	40	5 DRO
80	1	8	16569						S22 W32				H	10	4 BXO

HALE REGION 16566 CMP DATE 6.3 RETURN OF REGIONS 16487, 16494 & LEAD OF 16490 ROTATION 2, 2, 5 & 4

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	12	30	16566	N14 E78	242	800	2.5								
79	12	31	16566	N14 E71	235	1400	3.0								
80	1	1	16566	N14 E56	238	3200	4.0	21176	N13 E60		(BP)	4	H	280	7 EAO
80	1	2	16566					21176	N14 E48		(BP)	5			
80	1	3	16566					21176	N13 E31		(BP)	5			
80	1	4	16566	N14 E18	236	2600	3.5	21176	N13 E19		(BY)	5			
80	1	5	16566	N13 E06	234	2700	3.5	21176	N13 E05		(BY)	5			
80	1	6	16566						N13 W07				R	220	16 EKO

HALE REGION 16567 CMP DATE 7.4 RETURN OF REGION 16491 ROTATION 6 AND 3

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
79	12	31	16567	S07 E78	228	300	1.5								
80	1	1	16567	S04 E67	227	400	1.5								
80	1	4	16567	S02 E30	224	900	2.5								
80	1	5	16567	S01 E20	220	1300	3.0								

HALE REGION 16572 CMP DATE 7.5

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	1	16572	N19 E70	224	800	3.0	21177	N19 E70		(AP)	3			
80	1	2	16572					21177	N19 E58		(AP)	5			
80	1	3	16572					21177	N19 E42		(BP)	5			
80	1	4	16572	N20 E33	221	3700	3.5	21177	N19 E30		(BY)	5			
80	1	5	16572	N21 E21	219	3900	3.5	21177	N19 E17		(BY)	5			

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HALE REGION 16568 CMP DATE 7.6 RETURN OF REGION 16492 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
79	12	31	16568	S15 E88	226	580	2.0
80	1	1	16568	S15 E71	223	700	1.5
80	1	2	16568				
80	1	3	16568				
80	1	4	16568	S13 E36	218	1500	3.0
80	1		16568				
80	1	5	16568	S13 E22	218	1500	3.5
80	1	6	16568				
80	1		16568				
80	1	7	16568				
80	1	8	16568				
80	1	9	16568				
80	1	12	16568				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21181	S14 E80		(AP)	3				
21181	S14 E68		(AP)	4				
21181	S14 E53		(AP)	4				
21181	S13 E41		(BY)	4				
21188	S11 E30		(AP)	2				
21181	S14 E28		(AP)	4				
	S15 E16				R	170	16	DAO
	S14 W01				R	20	1	HRX
	S14 W03				H	80	4	CSO
	S12 W16				H	110	7	CSO
	S14 W28				H	70	4	CSO
	S14 W65				R	20	2	CRO

HALE REGION 16575 CMP DATE 7.6 RETURN OF REGION 16493 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
80	1	4	16575	S34 E36	218	200	2.5
80	1	5	16575	S33 E23	217	300	2.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

HALE REGION 16576 CMP DATE 8.9

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
80	1	02	16576				
80	1	03	16576				
80	1	4	16576	S18 E52	202	1900	3.0
80	1	5	16576	S18 E40	200	1600	3.0
80	1	6	16576				
80	1	7	16576				
80	1	8	16576				
80	1	9	16576				
80	1	11	16576				
80	1		16576				
80	1	12	16576				
80	1	13	16576				
80	1		16576				
80	1	14	16576				
80	1		16576				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21185	S19 E75		(AP)	2				
21185	S19 E61		(AP)	4				
21185	S19 E49		(BP)	4				
21185	S19 E40		(BP)	5				
	S20 E24				R	110	1	HSX
	S19 E05				H	80	1	HSX
	S18 W01				H	130	2	CSO
	S19 W20				H	50	2	HSX
	S14 W43				H	70	2	CSO
	S19 W35				H	60	1	HSX
	S18 W55				R	40	1	HRX
	S19 W61				H	50	1	HSX
	S14 W70				H	30	1	HRX
	S14 W82				H	20	1	AXX
	S19 W73				H	30	1	HSX

HALE REGION 16580 CMP DATE 9.1 RETURN OF REGION 16496 ROTATION 6 AND 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
80	1	4	16580	N23 E60	194	600	2.5
80	1	5	16580	N21 E43	197	1900	4.0
80	1	15	16580				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21190	N19 E58		(B)	3				
21190	N19 E43		(B)	4				
21196	N22 W80		X	1				

HALE REGION 16581 CMP DATE 10.2 RETURN OF REGION 16505 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
80	1	4	16581	N15 E68	186	2000	3.0
80	1	5	16581	N15 E53	187	4400	3.5
80	1	15	16581				
80	1	16	16581	N16 W87	184	500	1.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21189	N16 E75		(AP)	3				
21189	N16 E58		(BY)	4				
21197	N14 W69		(AP)	3				

HALE REGION 16577 CMP DATE 10.8 RETURN OF REGION 16498 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
80	1	4	16577	S12 E69	185	100	1.0
80	1	5	16577	S12 E68	172	700	3.5
80	1	6	16577				
80	1	7	16577				
80	1	8	16577				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21193	S11 E67	176	(B)	3				
	S12 E53				R	160	19	DAI
	S12 E36				H	310	16	DHI
	S11 E27				H	730	33	DKI

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HALE REGION 16577 (CONT) CMP DATE 10.8 RETURN OF REGION 16498 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	9	16577						S11 E10				H	580	16	DKI
80	1	11	16577						S11 W04				H	590	24	DKI
80	1	12	16577						S12 W25				R	470	26	EKI
80	1	13	16577						S11 W30				H	560	17	EKI
80	1	14	16577						S11 W43				H	440	13	EKI
80	1	15	16577					21193	S13 W65	176	(BF)	4	H	380	9	EKI
80	1	16	16577	S11 W78	175	1080	3.8	21193	S13 W79	177	BF					

HALE REGION 16578 CMP DATE 10.8 RETURN OF REGION 16503 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	4	16578	S23 E75	179	900	1.5									
80	1	5	16578	S24 E65	175	700	2.5									

HALE REGION 16582 CMP DATE 10.8 RETURN OF PART OF REGION 16507 ROTATION 5

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	4	16582	N27 E75	179	200	2.0									
80	1	5	16582	N27 E65	175	400	2.5									

HALE REGION 16583 CMP DATE 11.2 RETURN OF REGION 16513 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	5	16583	N18 E70	170	400	3.0	21194	N18 E71		(AP)	3				

HALE REGION 16585 CMP DATE 11.2 RETURN OF REGION 16507 ROTATION 5

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	15	16585					21198	N27 W57		(B)	3				
80	1	16	16585	N26 W73	170	1500	2.5	21210	N29 W66	164	AP		H	190	7	CSO
80	1		16585					21198	N25 W77		AP					

HALE REGION 16584 CMP DATE 11.6

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	5	16584	S34 E75	165	200	2.0									

HALE REGION 16586 CMP DATE 12.1

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	16	16586	N13 W61	150	100	2.0									

HALE REGION 16587 CMP DATE 13.1 RETURN OF REGION 16515 ROTATION 5

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	15	16587					21199	N18 W22		(B)	3				
80	1	16	16587	N17 W37	134	300	2.5	21199	N17 W35		B					
80	1	17	16587						N16 W49				R	10	3	BXO

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HALE REGION 16589 CMP DATE 14.1

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	15	16589					21200	N09 W20		(BP)	3			
80	1	16	16589	N08 W35	132	500	3.0	21200	N08 W35		BP				
80	1	17	16589						N08 W48				R	40	11 CRC
80	1	18	16589						N09 W63				R	40	3 CRO

HALE REGION 16594 CMP DATE 14.1 RETURN OF PART OF REGION 16516 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	16	16594	S18 W35	132	200	1.0								

HALE REGION 16588 CMP DATE 14.2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	15	16588					21201	N23 W22		(AP)	3			
80	1	16	16588	N23 W33	130	300	2.5	21201	N22 W35		AP				

HALE REGION 16591 CMP DATE 14.3 RETURN OF REGION 16522 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	15	16591					21202	S09 W18		(AF)	2			
80	1	16	16591	S08 W32	129	900	2.5								

HALE REGION 16590 CMP DATE 14.8

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	15	16590					21203	N11 W09		(8)	3			
80	1	16	16590	N10 W25	122	1200	3.0	21203	N09 W25		8				
80	1	20	16590	N10 W78	121	900	3.0								

HALE REGION 16592 CMP DATE 15.4 RETURN OF PART OF REGION 16525 ROTATION 6 AND 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	15	16592					21204	S17 W03	114	(BP)	4			
80	1	16	16592	S16 W18	115	1200	3.5	21204	S17 W17	115	8				
80	1	19	16592					21204	S17 W56	114	(AP)	3			
80	1	20	16592	S15 W73	116	1700	3.5	21204	S20 W65	110	(AP)	2			
80	1	21	16592	S17 W85	116	1400	3.0		S22 W77				R	60	1 HSX

HALE REGION 16596 CMP DATE 15.5 RETURN OF PART OF REGION 16523 ROTATION 5

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	16	16596	N25 W16	113	200	1.5								

HALE REGION 16595 CMP DATE 15.6 RETURN OF PART OF REGION 16504 ROTATION 5

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT CLASS
80	1	16	16595	N35 W15	112	300	1.0								
80	1	20	16595	N40 W60	103	500	1.5								
80	1	21	16595	N43 W70	101	400	1.5								

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HALE REGION 16597 CMP DATE 15.8 RETURN OF PART OF REGION 16524 ROTATION 6

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	16	16597	N15 W12	109	100	1.5									
80	1	20	16597	N15 W66	111	100	2.0									

HALE REGION 16593 CMP DATE 15.9 RETURN OF PART OF REGION 16525 ROTATION 6 AND 3

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	16	16593	S22 W11	108	300	3.0									
80	1	20	16593	S22 W66	111	800	3.0									

HALE REGION 16598 CMP DATE 17.0

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	15	16598					21205	N33 E20	91	(B)	4				
80	1	16	16598	N32 E04	93	1700	3.0	21205	N30 E01	97	BP		H	110	7	CSO
80	1	17	16598						N29 W15				R	60	1	HSX
80	1	18	16598						N29 W27				R	40	1	HSX
80	1	19	16598					21205	N29 W29	87	(AP)	2	P	50	1	HSX
80	1	20	16598	N32 W48	91	1500	3.5	21205	N29 W52	97	(AP)	2	R	30	2	HRX
80	1	21	16598	N32 W60	91	1000	3.0		N28 W65				R	10	1	AXX
80	1	22	16598	N32 W75	91	900	2.5									

HALE REGION 16599 CMP DATE 17.1 RETURN OF REGION 16533 ROTATION 2

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	16	16599	S33 E05	92	300	2.5	21211	S32 E09	89	AP		H	10	1	AXX
80	1	20	16599	S33 W44	87	700	3.0									
80	1	21	16599	S33 W58	89	500	3.0									
80	1	22	16599	S33 W70	86	300	2.5									

HALE REGION 16600 CMP DATE 17.9 RETURN OF PART OF REGION 16529 ROTATION 4 AND 3

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	16	16600	S18 E15	82	1300	3.0	21212	S17 E14	84	AP					
80	1	20	16600	S18 W38	81	1000	3.0									
80	1	21	16600	S18 W53	84	800	3.0									
80	1	22	16600	S17 W65	81	700	3.0									
80	1	23	16600	S18 W76	80	400	2.0									

HALE REGION 16616 CMP DATE 18.9

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	22	16616	N08 W51	67	100	2.5									
80	1	23	16616	N08 W65	69	100	1.0									

HALE REGION 16601 CMP DATE 19.5 RETURN OF PART OF REGION 16529 ROTATION 4 AND 3

CALCIUM PLAGE DATA							SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	15	16601					21206	S14 E50	61	(B)	4				
80	1	16	16601	S15 E35	62	3200	4.0	21206	S15 E37	61	B					
80	1		16601					21213	S18 E23		(B)	3				
80	1	19	16601					21206	S15 W13	71	(BP)	3				
80	1	20	16601	S15 W17	60	4000	4.0	21206	S14 W21	66	(BP)	3	R	100	9	CSO
80	1	21	16601	S15 W28	59	3300	3.5	21206	S14 W35	67	(AP)	3	R	90	11	CSO
80	1	22	16601	S15 W42	58	3800	3.0	21206	S15 W42	60	(B)	3				
80	1	23	16601	S15 W55	59	2200	2.5	21206	S16 W56	61	(B)	3	R	40	6	CRO
80	1	24	16601	S15 W68	58	1900	3.5	21206	S13 W78	70	(AP)	3				
80	1	25	16601	S16 W78	57	900	2.5									

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HALE REGION 16611 CMP DATE 20.1

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
80	1	21	16611	N15 W21	52	200	2.5
80	1	22	16611	N15 W35	51	200	2.5
80	1	23	16611	N15 W48	52	100	1.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

HALE REGION 16605 CMP DATE 20.7

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
80	1	20	16605	S08 W01	44	200	2.0
80	1	21	16605	S08 W12	43	100	1.5
80	1	22	16605	S08 W27	43	100	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

HALE REGION 16602 CMP DATE 21.1

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
80	1	15	16602				
80	1	16	16602	N13 E58	39	1500	3.0
80	1	17	16602				
80	1	18	16602				
80	1	19	16602				
80	1	20	16602	N13 E04	39	3300	3.5
80	1	21	16602	N13 W08	39	3800	3.5
80	1	22	16602	N13 W24	40	3500	3.0
80	1	23	16602	N14 W37	41	2100	3.0
80	1	24	16602	N14 W50	40	4200	3.5
80	1	25	16602	N14 W62	41	3200	3.5
80	1	26	16602				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21208	N14 E75	36	(BF)	2				
21208	N13 E61	37	B		H	260	19	DAI
	N13 E48				R	330	12	DAI
	N13 E34				R	230	14	DAI
21208	N14 E20	38	(B)	4	P	240	23	ESO
21208	N13 E07	38	(B)	4	R	140	15	EAO
21208	N13 W17	49	(B)	4				
21208	N13 W20	38	(B)	4	P	130	15	EAO
21208	N13 W34	39	(B)	3	R	150	23	EAO
21208	N13 W50	42	(BY)	4	R	100	24	CRO
21208	N10 W64	44	(BP)	3	R	160	13	DRO
21208	N10 W80	45	(B)	4				

HALE REGION 16603 CMP DATE 21.6

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
80	1	15	16603				
80	1	16	16603	S20 E62	35	400	2.0
80	1	20	16603	S18 E11	32	400	3.0
80	1	21	16603	S18 W03	34	400	3.0
80	1	22	16603	S18 W17	33	400	2.0
80	1	23	16603	S18 W32	36	200	2.0
80	1	24	16603	S18 W44	34	300	2.5
80	1	25	16603	S18 W55	34	300	2.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
21207	S19 E75		(AP)	2				
21207	S19 E62		AP					

HALE REGION 16612 CMP DATE 21.6

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
80	1	21	16612	N24 W02	33	100	1.5
80	1	22	16612	N24 W15	31	100	2.0
80	1	23	16612	N25 W28	32	100	1.5
80	1	24	16612	N25 W41	31	100	2.0
80	1	25	16612	N25 W52	31	100	2.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

HALE REGION 16613 CMP DATE 21.9

CALCIUM PLAGE DATA

YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT
80	1	21	16613	S08 E02	29	100	2.5
80	1	22	16613	S08 W13	29	100	2.0
80	1	23	16613	S07 W26	30	100	2.0
80	1	24	16613	S07 W40		100	2.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S12 E04				R	80	1	HSX

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HALE REGION 16604 CMP DATE 22.6 RETURN OF REGION 16541 ROTATION 2

				CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	15	16604					21209	S12 E83	28	(AP)	2				
80	1	16	16604	S13 E70	27	700	1.5	21209	S13 E69	29	AP					
80	1	19	16604					21209	S12 E38	28	(AP)	3				
80	1	20	16604	S16 E25	18	1900	3.5	21209	S12 E16	29	(AP)	3	R	80	1	HSX
80	1	21	16604	S16 E12	19	2700	3.5	21209	S15 E06	26	(BP)	3	R	40	10	DRO
80	1	22	16604	S16 W03	19	2600	3.5	21209	S16 W07	25	(B)	3				
80	1		16604					21216	S12 W09	27	(AP)	4				
80	1	23	16604	S16 W18	22	2100	4.0	21209	S16 W21	26	(B)	5	R	580	35	DKI
80	1		16604					21216	S12 W23	28	(AP)	4				
80	1	24	16604	S16 W30	20	3500	4.0	21209	S16 W34	26	(B)	5	R	570	44	DKI
80	1		16604					21216	S12 W36	28	(AP)	4				
80	1	25	16604	S16 W42	21	3500	4.0	21209	S16 W47	27	(D)	5	R	550	16	DKI
80	1		16604					21216	S13 W49	29	(AP)	4				
80	1	26	16604					21209	S16 W61	26	(B)	4				
80	1		16604					21216	S12 W65	30	(AP)	4				
80	1	28	16604						S17 W78				R	470	5	HKX

HALE REGION 16607 CMP DATE 23.2

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	19	16607					21215	N15 E48	10	(B)	3				
80	1	20	16607	N14 E33	10	2700	4.0	21215	N14 E34	11	(B)	3	R	50	14	DRO
80	1	21	16607	N14 E19	12	2300	3.5	21215	N15 E22	10	(B)	3	R	60	18	CSO
80	1	22	16607	N14 E05	11	2400	3.0	21215	N14 E09	9	(BF)	4	P	60	12	CRO
80	1	23	16607	N14 W07	11	2200	3.0	21215	N15 W05	10	(B)	4	R	80	18	CAO
80	1	24	16607	N14 W20	10	2200	3.0	21215	N15 W20	12	(B)	3	R	30	7	CRO
80	1	25	16607	N14 W34	13	2200	3.5	21215	N14 W35	15	(AP)	2	R	10	1	AXX

HALE REGION 16606 CMP DATE 23.3

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	20	16606	S09 E34	9	300	2.0									
80	1	21	16606	S09 E18	13	300	2.5									
80	1	22	16606	S10 E07	9	200	2.0									

HALE REGION 16608 CMP DATE 23.6 RETURN OF PART OF REGION 16540 ROTATION 8

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	20	16608	N25 E38	5	300	3.0									
80	1	21	16608	N25 E25	6	300	2.5									
80	1	22	16608	N25 E11	5	200	3.0									
80	1	23	16608	N26 W02	6	200	2.5									
80	1	24	16608	N27 W14	4	200	2.5									
80	1	25	16608	N27 W27	6	200	2.5									

HALE REGION 16620 CMP DATE 25.4

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	23	16620	N09 E22	343	200	3.0	21220	N10 E23	343	(AP)	2	R	10	1	AXX
80	1	24	16620	N09 E08	343	500	3.0	21220	N10 E08	345	(B)	3	R	30	9	CRO
80	1	25	16620	N09 W06	345	600	3.5	21220	N10 W05	345	(B)	3	R	30	9	CRO

HALE REGION 16609 CMP DATE 25.9

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	20	16609	S05 E70	334	1200	3.0		S05 E68				R	20	3	BXO
80	1	21	16609	S07 E57	335	1200	4.0		S05 E58				R	10	3	BXO
80	1	22	16609	S07 E42	335	1200	4.0	21217	S06 E44	335	(B)	2	P	30	6	BXO
80	1	23	16609	S07 E29	336	1100	3.0	21217	S06 E30	336	(BP)	3	R	20	1	HRX
80	1	24	16609	S07 E15	336	1000	3.5	21217	S06 E17	336	(B)	3	R	20	9	BXI
80	1	25	16609	S07 E02	337	1000	3.5									

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HALE REGION 16623 CMP DATE 26.0

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	25	16623	N29 E84	335	300	2.0									
80	1	28	16623						N29 W35				R	10	3	BXO

HALE REGION 16610 CMP DATE 26.6 RETURN OF REGION 16548 ROTATION 3 AND 4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	20	16610	S13 E70	334	400	2.0									
80	1	21	16610	S15 E60	332	800	2.0									
80	1	22	16610	S16 E50	327	1500	2.5									
80	1	23	16610	S16 E34	331	800	2.0									
80	1	24	16610	S18 E24	327	1400	2.5									
80	1	25	16610	S18 E12	327	1200	3.0									

HALE REGION 16614 CMP DATE 26.7 RETURN OF REGION 16550 ROTATION 7 AND 5

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	21	16614	N17 E66	326	200	1.5									
80	1	22	16614	N18 E53	324	300	2.0									
80	1	23	16614	N18 E40	325	300	2.0									
80	1	24	16614	N18 E26	325	500	2.5									
80	1	25	16614	N18 E13	326	700	2.5									

HALE REGION 16615 CMP DATE 27.5 RETURN OF REGION 16547 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	21	16615	S25 E70	322	800	2.5									
80	1	22	16615	S25 E55	322	800	3.0	21219	S27 E69		(AF)	2				
80	1	23	16615	S25 E43	322	500	2.5	21219	S27 E55		(AF)	2				
80	1	24	16615	S27 E37	314	500	2.5									
80	1	25	16615	S27 E23	316	400	3.0									

HALE REGION 16618 CMP DATE 28.4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	22	16618	S13 E75	302	1200	3.0	21218	S12 E73	306	(AP)	3				
80	1	23	16618	S12 E63	302	1000	3.0	21218	S12 E62	304	(B)	3	R	40	6	CRO
80	1	24	16618	S12 E48	303	1800	3.5	21218	S12 E48	305	(B)	3	R	30	5	CRO
80	1	25	16618	S12 E35	304	1900	3.5	21218	S12 E41	299	(AF)	2	R	10	2	BXO
80	1	26	16618					21222	S10 E17	308	(AP)	3				
80	1	27	16618						S11 E16				H	30	7	CSO
80	1	28	16618						S11 W04				R	30	15	BXO
80	1	29	16618						S12 W19				R	10	4	BXO
80	1	30	16618						S11 W36				R	10	3	BXO
80	1	31	16618					21222	S11 W52	313	(AP)	3	R	10	2	BXO

HALE REGION 16617 CMP DATE 28.9 RETURN OF REGION 16556 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	22	16617	N20 E80	297	200	2.0									
80	1	23	16617	N22 E72	293	700	2.5									
80	1	24	16617	N22 E58	293	800	3.0									
80	1	25	16617	N22 E42	297	1000	3.0									

HALE REGION 16621 CMP DATE 29.4 RETURN OF REGION 16557 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	23	16621	N15 E75	290	100	2.5									
80	1	24	16621	N14 E65	286	300	2.0									

CONTD

REGIONS OF SOLAR ACTIVITY

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HALE REGION 16621 (CONT) CMP DATE 29.4 RETURN OF REGION 16557 ROTATION 3

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	25	16621	N13 E49	290	300	2.5									
80	1	28	16621						N14 E08				R	10	3	BXO
80	1	29	16621						N15 W05				R	10	1	AXX
80	1	30	16621						N14 W20				R	10	2	BXO
80	1	31	16621					21225	N15 W34	295	(AF)	3	R	10	1	AXX

HALE REGION 16619 CMP DATE 29.7 RETURN OF PART OF REGION 16555 ROTATION 4

			CALCIUM PLAGE DATA					SUNSPOT DATA							
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	22	16619	S25 E80	257	300	1.5									
80	1	23	16619	S24 E70	295	300	2.5		S27 E58				R	10	1	AXX
80	1	24	16619	S25 E65	286	800	2.5									
80	1	25	16619	S27 E52	287	900	2.5									

HALE REGION 16622 CMP DATE 30.5 RETURN OF REGION 16558 ROTATION 2

			CALCIUM PLAGE DATA					SUNSPOT DATA								
YR	MO	DA	HL NO.	LAT CMD	L	AREA	INT	NW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
80	1	24	16622	S16 E75	276	1400	4.0	21221	S18 E75	278	(AP)	3	R	60	5	CRO
80	1	25	16622	S16 E63	276	3100	4.0	21221	S18 E61	279	(BP)	3	R	40	4	CRO
80	1	26	16622					21221	S20 E47	278	(AP)	3				
80	1	28	16622						S20 E26				R	30	15	BXO
80	1	29	16622						S22 E14				R	80	11	DRI
80	1	30	16622						S22 W03				R	30	6	CRO
80	1	31	16622					21226	S16 W16	277	(BF)	3	R	20	7	BXO

DAILY CALCIUM PLAGE INDEX

JANUARY 1980

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
80	1	1	49.5	80	1	11	*	80	1	21	49.7
80	1	2	*	80	1	12	*	80	1	22	45.3
80	1	3	*	80	1	13	*	80	1	23	31.8
80	1	4	68.6	80	1	14	*	80	1	24	47.1
80	1	5	80.9	80	1	15	*	80	1	25	48.3
80	1	6	*	80	1	16	35.8	80	1	26	*
80	1	7	*	80	1	17	*	80	1	27	*
80	1	8	*	80	1	18	*	80	1	28	*
80	1	9	*	80	1	20	53.9				

* NO OBSERVATIONS

Note: No calcium spectroheliograms were secured at the Mt. Wilson Observatory on Jan. 2, 3, 6-15, 17, 18, 19, and 26-31, 1980.
No sunspot observations were made at Mt. Wilson on Jan. 6-14, 17, 18, and 27-30, 1980. (Severe weather problems).

REGION 16557 IS THE RETURN OF 16483 WHICH GREW ON 11 DEC. 1979.
REGION 16558 IS A NEW PLAGE IN LOCATION OF TRAILING PART OF 16467
REGION 16579 IS A NEW PLAGE IN LOCATION OF 16479
REGION 16592 IS PART OF THE RETURN OF 16525 WHICH GREW ON 24 DEC. '79
REGION 16602 IS A NEW PLAGE IN THE LOCATION 16538
REGION 16607 IS A NEW PLAGE IN THE LOCATION 16545

CONTIGUOUS PLAGES, JANUARY 1980

16558 - 16565

SUDDEN IONOSPHERIC DISTURBANCES

JANUARY 1980

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
01	0603	0654	0613	1-	3				2				*	
01	1752	1907	1816	2-	3	1			3				1752	16566
02	1312	13300	1330	1	1				1		1		*	
03	1640	1752	1701	1-	1				1		1		1640	16566
04	1920	1955	1925	1	1						1		1919	16571
05	0520	0549	0527	1-	1				1				0506	16558
05	1530	1619	1541	1-	3	1			1		7		1523	16583
05	1757	1822	1800	1-	3						4		1756	16566
05	1758	1907	1821	1-	1				1		1		1746	16577
05	1916	1946	1933	1	3				1		3		1914	16566
06	0708	0738	0713	1	1				1				0712E	16576
06	0900	0930	0911	1	5			2	1	1	2		NF	
06	1009	1035	1021	1-	5				2	1	1		1359	16577
06	1356	1528	1414	1	5	1			1		2		1359	16577
06	1655	1738	1702	1+	3				1		9		1651	16580
06	1951	2043	2001	1	3				1		6		NF	
06	2126	2238	2136	2	5	1		1	2		9		*	
07	0152	0228	0158	1-	5				2		1		0154E	NO DATA
07	0243	0315	0250	1-	5				1		1		*	
07	0657	0718	0659	1-	1				1				NF	
07	0736	0808	0741	1-	1				1				NF	
07	1211	1222	1216	1-	1			1		1			1213	NO DATA
07	1307	1340	1318	2	5	1		2	2	1	3		1315E	NO DATA
07	1822	1925	1836	2	3	2			1		14		*	
07	2050	2130	2057	2	1						1		*	
08	0108	0205	01000	2	1						1		NF	
08	0400	0632	0424	2+	1				1				0415E	NO DATA
08	0728	0804	0735	1-	1				1				NF	
08	1006	1050	1016	2	5	3		2	1	1			0958	NO DATA
08	1530	1615	1542	1+	3				1		6		1533E	NO DATA
08	1557	1645	1601	1+	1						1		1552	NO DATA
08	1714	1800	1727	2-	3				1		7		1708	NO DATA
08	2025	2053	2032	1-	3						3		2027	NO DATA
08	2205	2227	2209	1-	3				1		2		2206	NO DATA
08	2355	0017	0001	1-	3				1		1		*	
09	0026	0133	0039	2+	1	1			1				NF	
09	0401	0425	0406	1-	1				1				*	
09	0548	0612	0555	1-	1				1				0547E	NO DATA
09	0650E	0801	0740	1-	1				1				NF	
09	1250	1314	1300	1-	1				1		1		1242	NO DATA
09	1320	1405	1345	1-	1				1		1		NF	
09	1925	1946	1935	1-	1				1		1		NF	
10	0217	0317	0236	1-	1				2				0216	NO DATA
10	0457	0723	0517	3-	3	2			2				0500	NO DATA
10	1321	1407	1337	1-	5				1		2		*	
10	1841	2012	1923	1-	1				1		1		NF	
10	1955	2025	2000	2	1	1							*	
10	2150	2204	2154	1-	5				1		1		*	
10	2231	2330	2246	2	5	1		1	1		1		*	
11	0022	0100	0034	1-	1				2				NF	
11	0406	0537	0424	2-	1				2				NF	
11	0619	0713	0639	1-	1				1				NF	
11	1145	1230	1149	1+	5			2	3		3		NF	
11	1225	1235D	1235	1	1				1		1		*	
11	1301	1320D	1320	1	5				1		2		*	
11	1356	1420	1403	1+	5			2	1	1	3		1356	NO DATA
11	1812	1843	1816	2	1						1		*	
11	2117	2133	2120	1	5				1		3		*	
12	0116	0153	0130	1-	1				2				*	
12	0311	0356D	0320	1	1	1			2				NF	
12	0355E	0415D	0400	1-	1				1				NF	
12	0415E	0506	0422	1	1				1				NF	
12	0622	0649	0625	1-	5				1		1		*	
12	0727	0927	0753	2	5				2		1		*	
12	0746	0828	0755	2	1			1			2		*	
12	0936	1000	0943	1-	5				2				*	
12	1121	1125D	1125	1	5	2		2	2	1	3		*	
12	1155	1220	1200	1	5	2			2	1	3		1155	NO DATA
12	1245	1255D	1255	1-	1				1		1		*	
12	1339	1430	1343	2-	5	2		2	2	1	3		*	
12	1549	1651	1605	2	3	1			1				*	
12	2326	0005	2332	1-	1				2		11		*	
13	0214	0250D	0228	1-	1				2				*	
13	0250E	0320D	0258	1-	1				1				*	
13	0321	0455	0334	3-	5	1			1		1		*	
13	0500E	0543	0509	1-	3			1	1				*	
13	0800	0905	0822	1-	1				1				*	
13	0918	0950	0926	1-	3	1				1	1		0917	NO DATA
13	1015	1023D	1023	1-	3					1	1		NF	
13	1200	1320	1236	1	5			1	1	1	1		1212E	NO DATA
13	1619	1721	1628	2	3	1					12		1619	NO DATA
13	1633	1735	1636	1	1				1		1		NF	
13	1813	1846D	1846	2	3	1			1		12		1817E	NO DATA
13	1911	2000	1923	2	3	1			2		11		*	
13	2225	2245	2229	1-	5				1		3		*	
13	2322	0021	2342	1-	1				1				*	

SUDDEN IONOSPHERIC DISTURBANCES

JANUARY 1980

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	HALE REGION
14	0111	0155D	0118	1	5				2		1		*	
14	0621	0805	0630	2	5	1			2		1		NF	
14	1125	1200	1133	2-	5			1	1	1	1		NF	
14	1222	1300	1228	1	5			1	1	1	1		1220	NO DATA
14	1304	1315D	1315	1	1				1		1		1313	NO DATA
14	1324	1338D	1338	1	5				1		1		1321	NO DATA
14	1357	1435	1411	1-	1				1		1		*	
14	1840	1930	1848	2-	3	1			1		9		1840	NO DATA
14	2239	2320	2244	1-	5				1		2		*	
14	2327	0007	2340	1-	1				1				NF	
15	0214	0251	0218	1-	1				1				*	
15	0432	0454	0439	1-	1				1				*	
15	1300	1330	1304	1	5			1	2	1	1		*	
16	0039E	0146	0048	1-	1				1				*	
16	1356	1454	1417	1	1				1		1		NF	
19	0735	0820	0743	1-	1				1				NF	
19	0908	0940	0914	1-	5				1	1	8		0911E	NO DATA
19	1704	1815	1709	1	3					1			1702	NO DATA
21	0834	0956	0849	1-	1				1				0845E	16602
22	0636	0725	0642	1-	1				1				NF	
22	1800	1824	1803	1-	3						4		1800	16605
22	1856	1924	1902	1	3						5		1858	16613
23	0749	0812	0753	1-	1				1				0750	16610
23	0915	0930	0919	1-	5				1	1			NF	
23	1253	1310	1256	1-	1					1			1252	16610
23	1630	1725	1640	1	1						1		1639	16604
23	1734	1758	1737	1	3	1					5		1732	16604
23	1936	2002	1943	1-	1						1		1932	16604
23	2346	0008	2350	1-	1				1				2344	16604
24	0059	0141	0113	1-	1				1				*	
24	0200	0248	0208	1-	1				1				*	
24	0744	0805D	0753	1-	5				2				*	
24	0805E	0834	0816	1-	1				1				0808E	16604
24	0930	0939D	0939	1	5				1	1	1		0942E	16604
24	0957	1030	1003	1	5	1			1	1	1		NF	
24	1033	1100	1037	1-	5				1		1		NF	
24	1121	1140	1126	1-	1					1			*	
24	1215	1230	1220	1-	5	1				1			1213E	16604
24	1310	1330	1315	1-	1					1			NF	
24	1543	1553D	1553	2-	3				1		7		NF	
24	1603	1703	1608	1-	3	1					6		1557	16622
24	2345	0016	2353	1-	1				1				*	
25	0118	0205	0128	1-	1				1				NF	
25	0307	0338	0316	1-	1				1				0312E	16602
25	0632	0719	0644	1-	1				1				NF	
25	1139	1213	1144	1-	5				1	1	1		NF	
25	1447	1525	1500	1-	5				1		2		1446	16602
25	1508	1624	1610	1-	1						1		1506	16604
25	1541	1700	1609	2	5				1		11		1532	16622
25	1717	1744	1725	1	5				1		8		1719E	16604
25	1907	1945	1914	1	5				1		7		1908E	16602
25	2101	2305	2150	2	5	3			2		9		2058	16604
26	0547	0635	0600	1-	1				1				NF	
26	0658	0740	0707	2	5				1		1		0658	NO DATA
26	0741E	0844	0748	1	1				1				NF	
26	1320	1331D	1331	1-	1				1				NF	
26	1344	1521	1416	1-	1				1				NF	
26	1508	1538	1520	1+	1						1		1510	NO DATA
26	1936	2000	1939	1-	3						10		1938	NO DATA
26	2006	2030	2012	1-	3						2		2000	NO DATA
26	2134	2157	2142	1-	5				1		1		2125	NO DATA
26	2208	2246	2216	1	5				1		4		2211	NO DATA
26	2344	0008	2352	1-	1				1				NF	
27	0057	0113D	0104	1-	1				1				0059	NO DATA
27	0113E	0147	0116	1-	1				1				NF	
27	0235	0319D	0244	1-	1				1				NF	
27	0319E	0341D	0325	1-	5				1		1		NF	
27	0341	0432	0353	3	5	2			1		1		NF	
27	0521E	0554	0533	1-	5				1		1		NF	
27	0609	0700	0627	1	5				1		1		NF	
27	1021	1046D	1046	1-	1				1				NF	
27	1106	1122	1110	1-	5				1	1	2		NF	
27	1145	1306	1157	3	5	3			1	1	3		1150	NO DATA
27	1321	1515	1407	1	1				1		1		1314	NO DATA
27	1815	1911	1823	1	5				1		12		1815	NO DATA
27	2215	2305	2226	1-	5				1		4		*	
27	2333	0155	2341	2	5	1			1		4		2340E	NO DATA
28	0246	0429	0306	2	5				1		1		0310E	NO DATA
28	0737	0800	0742	2	5				1	1	1		0738E	NO DATA
28	0912	0923	0920	1	5	1			1	1			0911	NO DATA
28	1158	1230	1215	1-	5				1	1	1		1153	NO DATA
28	1300	1320	1308	1	5					1	1		1302	NO DATA
28	1335	1434	1352	1	5			2	1	1	2		1334	NO DATA
28	1628	1815	1645	3	5				1		14		*	
28	1850	1930	1856	1	3						8		1852	NO DATA
28	2116	2152	2125	1	5				1		7		*	
28	2230	2357	2248	1-	5				1		4		2228	NO DATA

SUDDEN IONOSPHERIC DISTURBANCES

JANUARY 1980

DAY	UNIVERSAL TIME				WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TIME							KNOWN FLARE	HALE REGION
	START	END	MAX	IMP		SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD		
29	0352	0430	0401	1	5				1		1		0352E	NO DATA
29	0536	0608	0539	1-	5				1		1		*	
29	0621	0637	0622	1	5				1		1		NF	
29	0705	0735	0711	1-	5				1		1		0702E	NO DATA
29	0944	1035	0954	1	5			2	1	1	2		0945E	NO DATA
29	1210	1255	1227	1	3			1		1	1		1208	NO DATA
29	1644	1656D	1656	1	5				1		4		1644	NO DATA
29	1705	1858	1751	2	5				1		5		NF	
30	1736	1830	1800	2	5				1		11		1735	NO DATA
31	0106	0125	0112	1-	1				1				0107E	NO DATA
31	0138	0300	0146	1-	1				1				0142E	NO DATA
31	0439	0525	0453	1+	5	1			1		1		0441E	NO DATA
31	0554E	0654	0611	1-	1				1				*	
31	0708	0748	0714	1-	1				1				NF	
31	0809	0844	0816	1-	1				1				0803E	NO DATA
31	1150	1230	1159	1	5	2			1	1	3		1150	NO DATA

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01	UM 1000-1330, A46 0000-2400
02	UM 1530-1710
04	GN 2310-2400; A5 0000-2400
05	GN 0000-2400; A46 0000-2400; A5 0000-2400
06	GN 0000-1023; GN 1215-2300; A5 0000-2400
08	UM 1000-1405
10	PU 0830-1130
15	UM 1000-1405
16	UM 0900-1300; A28 0000-2400
17	GN 1226-2400; A28 0000-2400
18	GN 0000-0240; A28 0000-2400
20	A5 0000-2400
21	UM 0900-1400; A5 0000-2400
22	GN 1305-2400; A5 0000-2400
23	GN 0000-0022
25	A5 0000-2400
26	A5 0000-2400
29	A46 0000-2400
30	UM 1000-1355

STATIONS REPORTING FOR JANUARY 1980:

Cleveland (A28)	SES
Ellensburg (EB)	SES
Glenorchy (GN)	SWF
Hiraiso (HI)	SWF
Hobart (TA)	SEA
Huancayo (HU)	SWF
Inubo (IN)	SPA
Juliusruh (JU)	SWF
Kasugai (KA)	SPA
Kuhlungsborn (KU)	SEA, LF-SPA
Latrobe (A19)	SES
Littleton (A21)	SES
Louisville (A26)	SES
Luchow (LW)	SWF
Mahwah (A5)	SES
Missoula (A31)	SES
New Jersey (NJ)	SES
Panska Ves (PU)	SWF, SEA, SES
Pinehurst (A34)	SES
Sao Paulo (UM)	SES, SPA
Sofia (SF)	SES
Somerton (SO)	SWF
St. Cloud (SC)	SES
Thornwood (A48)	SES
Valley Cottage (A1)	SES
West Paterson (A46)	SES

SIDs BY HALE REGION

JANUARY 1980

DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
REGION 16558					1																										
16556	1		1		2																										
16571				1																											
16576						1																									
16577					1	1																									
16580						2																									
16583					1																										
16602																					1			3							
16604																							4	3	3						
16605																						1									
16610																							2								
16613																						1									
16622																								1	1						
NO REGION DATA							3	7	2	2	1	1	4	4					2							6	5	8	5	1	5
NO ASSOCIATED FLARE						2	2	2	4	1	4	3	2	3		1			1			1	1	5	3	5	1	2	2		1
NO FLARE PATROL	1	1				1	3	1	1	4	4	10	8	3	3	1								4			8		1		1
EVENT TOTALS	2	1	1	1	5	7	8	10	7	7	9	14	14	10	3	2	0	0	3	0	1	3	7	13	10	11	14	10	8	1	7

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JANUARY 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
01	0000	0557	CULG				0218.5	0219	1				IIIG
			LEAR				0218.7	0219.1	1				CONT
			LEAR				0218.7	0219.1	1				CONT
			LEAR				0435.8	0436.3	1				V
			LEAR				0435.8	0436.3	1				V
			LEAR				0524.8	0528.1	1				V
			LEAR				0524.8	0528.1	1				V
			LEAR				0558.1	0624.2	1				S
			LEAR				0558.1	0624.2	1				S
	0755	1515	DWIN										
			LEAR				0755.1	0755.9	1				CONT
			LEAR				0755.1	0755.9	1				CONT
			LEAR				0811.9	0812.2	1				V
			LEAR				0811.9	0812.2	1				V
	0757	1455	WEIS				0811.9	0812.5	2				IIIB
	0845	1445	BLEN										
			WEIS				1025.5	1025.7	1				IIIB,U
	1413	2345	HARV										
			HARV				1747	1748	2	1747	1748	2	IIIG
			HARV				1913		2				IIIB
	2036	2400	CULG				2148						IIIB,W
			HARV				2148		2				IIIB
			CULG				2214	2215	1				IIIG
			CULG				2215.5						IIIB,W
			CULG				2244						IIIB,W
			CULG				2350.5			2350.5			IIIB,W
			CULG				2351.5			2351.5			IIIB,W
			LEAR				2351.8	2352.0	1				III
			LEAR				2351.8	2352.0	1				III
02	0000	0735	CULG				0107						IIIB,W
			LEAR				0107.1	0107.3	1				III
			LEAR				0107.1	0107.3	1				III
			CULG	0128.5	0130	1							I
			CULG				0145.5			0145.5			IIIB,W
			LEAR				0145.5	0145.7	1				III
			LEAR				0145.5	0145.7	1				III
			LEAR				0305.4	0306.6	1				CONT
			LEAR				0305.4	0306.6	1				CONT
			CULG				0319	0457					IIIN,W
			CULG							0319	0457	2	IIIN
			LEAR				0319.3	0320.6	2				CONT
			LEAR				0319.3	0320.6	2				CONT
			CULG				0320	0320.5	2	0320	0320.5	3	IIIG
			PALE				0320.1	0320.5	1				III
			PALE				0320.1	0320.5	1				III
			LEAR				0328.2	0420.1	1				S
			LEAR				0328.2	0420.1	1				S
			CULG				0430.5		1				IIIB
			LEAR				0430.7	0435.1	2				CONT
			LEAR				0430.7	0435.1	2				CONT
			CULG				0432	0432.5	2	0432	0432.5	2	IIIG
			LEAR				0450.3	0529.0	1				S
			LEAR				0450.3	0529.0	1				S
			CULG				0450.5		1				IIIB
			CULG	0520	0520.5	3							IIIG
			CULG				0526.5	0527.5	1				IIIG
			LEAR				0734.5	0743.7	2				CONT
			LEAR				0734.5	0743.7	2				CONT
			LEAR				0811.9	0812.2	1				III
			LEAR				0811.9	0812.2	1				III
	0845	1445	BLEN										
	0757	0805	WEIS				0857.5	0858.1	1				IIIG
			LEAR				1015.1	1015.3	1				III
			LEAR				1015.1	1015.3	1				III
	0810	1456	WEIS				1015.2	1015.3	2				IIIB
			WEIS				1142.9	1143.1	1				IIIB
			WEIS				1240.5	1241.5	2				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JANUARY 1980

DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
02			WEIS				1251.1	1251.2	1				IIIB
	1311	1510	DWIN										
	1413	2358	HARV	1517	1518	2	1517	1518	2				IIIG
			HARV				1535		1				IIIG
			HARV				1825	1826	2				IIIG
			HARV				1833		2				IIIG
			HARV				2023	2024	2				IIIG
	2036	2400	CULG				2051.5	2052.5	1				IIIG
			HARV				2052		1				IIIG
			CULG				2116						IIIB,W
			CULG	2155	2155.5	1	2155	2155.5	1	2155.5	2156	1	IIIB
			CULG				2215			2215			IIIB,W
			CULG				2359						IIIB,W
03			LEAR				0103.0	0220.0	1				B
			LEAR				0103.0	0220.0	1				B
	0000	0736	CULG							0142	0143.5	1	IIIG
			CULG				0142.5	0143					IIIG,W
			PALE				0142.8	0143.3	1				III
			PALE				0142.8	0143.3	1				III
			CULG	0145.5	0146		0145.5	0146.5		0145.5	0146		IIIG,W
			CULG	0147.5		1	0147.5		1	0147.5		1	IIIB
			LEAR				0611.1	0611.4	1				V
			LEAR				0611.1	0611.4	1				V
			LEAR				0802.5	1053.0	1				B
			LEAR				0802.5	1053.0	1				B
	0756	1457	WEIS				0910.0	1418.0	1				IIIN
	0930	1520	DWIN										
			WEIS				1029.3	1035.0	2				II
			WEIS				1203.8	1204.3	2				IIIG
			WEIS				1205.6	1206.6	2				IIIG
			WEIS				1254.1	1255.0	2				IIIG
			WEIS				1322.3	1322.4	2				IIIB
			WEIS				1325.5	1325.8	2				IIIG
			WEIS				1352.2	1353.2	2				IIIG
	1413	2345	HARV										
			HARV				1440	1442	2				IIIG
	0845	1445	BLEN				1440.6	1441.9	3				IIIGG
			WEIS				1440.8	1444.2	3				IIIGG
			HARV				1508	1524	2				IIIGG
			HARV				1540	1541	2	1540	1541	2	IIIG
			HARV				1603	1604	2	1603	1604	2	IIIG
			HARV	1605	1606	2	1605	1607	2				I
			HARV				1651	1700	2	1653	1700	3	IIIGG
			HARV				1925		1	1925		2	IIIB
			HARV				1949		2	1949		1	IIIB
			PALE				1957.6	2002.7	1				CONT
			PALE				1957.6	2002.7	1				CONT
	2036	2400	CULG	2111		1							IIIB
			CULG				2139						IIIG,W
			CULG				2223			2223			IIIB,W
			CULG				2254.5						IIIB,W
			CULG				2321			2321.5			IIIB,W
			LEAR				2329.4	1053.0	1				B
			LEAR				2329.4	1053.0	1				B
04	0000	0736	CULG				0031						IIIB,W
			CULG							0042.5			IIIB,W
			CULG							0124	0125		IIIG,W
			CULG				0124	0125	2				IIIG
			CULG				0156						UNCLF,W
			CULG				0242	0318					IS,W
			CULG				0247.5	0248	1				UNCLF
			CULG				0603						IIIB,W
	0845	1445	BLEN										
	0756	1406	WEIS				0918.5	0919.0	2				IDC
	0940	1423	DWIN										
	1415	1458	WEIS				1020.7	1021.3	2				IIIG
			WEIS				1023.2	1023.6	1				IIIG
			WEIS				1210.3	1011.3	2				IIIG

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
04	1413	2345	HARV	1601	1604	2							IIIGG
			HARV				1716	1717	2				IIIB
			HARV				1739	1743	2	1739	1743	2	IIIG
			PALE				1839.5	1841.2	1				CONT
			PALE				1839.5	1841.2	1				CONT
			PALE				1842.7	1843.3	1				III
			PALE				1842.7	1843.3	1				III
			HARV	1843		2	1839	1847	2	1839	1847	3	IIIGG
			HARV	1853		1	1853		1				IIIG
			HARV				2004	2012	2				IIIG
	2037	2400	CULG	2050	2052		2048.5	2053					IIIGG,W
			CULG				2050.5	2051.5	1				IIIG
			PALE				2050.6	2051.4	1				CONT
			PALE				2050.6	2051.4	1				CONT
			HARV				2051		1	2051		2	IIIG
			CULG				2113.5	2114					IW
			CULG				2201.5	2203	1	2201.5	2204.5	1	IIIG
			CULG							2239			IIIB,W
			LEAR				2239.0	2240.3	1				CONT
			LEAR				2239.0	2240.3	1				CONT
			CULG				2239.5	2240	1	2240	2240.5	1	IIIG
			CULG				2337.5	2338					IIIG,W
			CULG							2338	2338.5	1	IIIG
			LEAR				2338.0	2338.2	1				III
			LEAR				2338.0	2338.2	1				III
			CULG	2349	2349.5								IIIG,W
05			LEAR				0050.0	1053.0	1				B
			LEAR				0050.0	1053.0	1				B
	0000	0737	CULG	0055.5	0056								UNCLF,W
			CULG				0134.5	0135.5					IIIG,W
			CULG				0151	0213					IS,W
			CULG				0204	0205	2	0204	0205	1	IIIG
			LEAR				0204.0	0205.6	2				V
			LEAR				0204.0	0205.6	2				V
			PALE				0204.3	0205.1	1				V
			PALE				0204.3	0205.1	1				V
			CULG	0250.5	0251.5	1	0251	0251.5	2				IIIG
			LEAR				0251.0	0252.2	1				CONT
			LEAR				0251.0	0252.2	1				CONT
			CULG				0333.5	0334.5					UNCLF,W
			CULG							0337.5	0338		IIIB,W
			CULG				0412	0503					IS,W
			CULG	0508	0508.5	1	0508	0508.5	1				IIIG
			CULG	0639.5	0640	1	0639.5	0640.5	2				IIIG
			LEAR				0639.9	0640.2	1				CONT
			LEAR				0639.9	0640.2	1				CONT
			CULG				0724.5	0725.5	1				IIIG
			CULG				0730.5	0731					IIIG,W
	0750	1500	DWIN										
	0756	1459	WEIS				0953.5	0955.1	2				IIIG
			LEAR				1023.0	1034.0	1			II	
			LEAR				1023.0	1034.0	1			II	
			WEIS				1023.5	1032.5	2			II	HARM
	0845	1445	BLEN				1129.5	1130.2	3				IIIG
			WEIS				1148.0	1148.3	2				IIIG
			WEIS				1207.8	1207.9	1				IIIB
			WEIS				1253.2	1255.7	2				IIIG
			WEIS				1326.0	1326.2	1				IIIB
			WEIS				1336.3	1337.6	1				IIIG
			WEIS				1347.4	1347.7	2				IIIG
	1413	2340	HARV										
			HARV				1504		1				IIIB,W
			HARV				1631	1635	2	1631	1635	2	IIIG
			HARV	1818		1							IIIB
			HARV				1836	1839	2	1836	1839	2	IIIG
			PALE				1837.4	1837.6	1				III
			PALE				1837.4	1837.6	1				III
			PALE				2004.6	2004.8	1				III
			PALE				2004.6	2004.8	1				III

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
05			HARV				2031	2038	1				I,DC
			CULG				2037	2400					IIIN,W
	2037	2400	CULG				2037	2354					IS,W,C
			CULG				2141			2141			IIIB,W
			CULG				2142.5	2143	1	2142.5	2143	2	IIIG
			CULG				2144	2145		2144	2145		IIIG,W
			CULG				2233	2233.5					IIIG,W,U
			CULG				2249	2250.5	2	2249.5	2250	2	IIIG,V,U
			HARV				2249	2250	3				IIIG
			LEAR				2249.0	2250.0	1				CONT
			LEAR				2249.0	2250.0	1				CONT
			PALE				2249.3	2250.0	1				V
			PALE				2249.3	2250.0	1				V
			LEAR				2306.7	1053.0	1				B
			LEAR				2306.7	1053.0	1				B
06	0000	0705	CULG				0024	0604					IIIN,W
			PALE				0140.4	0147.0	2				CONT
			PALE				0140.4	0147.0	2				CONT
			CULG				0141.5	0143	3	0141.5	0143	3	IIIG
			LEAR				0141.5	0142.7	3				CONT
			LEAR				0141.5	0142.7	3				CONT
			CULG				0147.5	0148	1	0147.5	0148	1	IIIG
			PALE				0154.9	0156.3	2				V
			PALE				0154.9	0156.3	2				V
			LEAR				0155.7	0158.1	2				CONT
			LEAR				0155.7	0158.1	2				CONT
			CULG				0156	0157.5	3	0155.5	0157.5	3	IIIGG
			LEAR				0249.8	0252.4	1				CONT
			LEAR				0249.8	0252.4	1				CONT
			CULG				0250.5	0252.5	1	0251	0252.5	1	IIIG
			CULG				0316.5			0316.5			IIIB,W
			CULG				0337.5	0338	1	0337.5	0338	2	IIIG
			CULG							0417	0418		IIIG,W
			LEAR				0419.4	0421.9	2				CONT
			LEAR				0419.4	0421.9	2				CONT
			CULG				0419.5	0421.5	2	0420	0421.5	2	IIIGG
			LEAR				0603.5	0610.6	1				CONT
			LEAR				0603.5	0610.6	1				CONT
			CULG				0604	0623	1				IIIS
			CULG							0607	0623	1	IIIN
			CULG	0608	0620	1							IIIG,N
			LEAR				0615.6	0626.2	2				CONT
			LEAR				0615.6	0626.2	2				CONT
			CULG				0617	0705					IS,W
			CULG				0623	0651					IIIN,W
	0756	1500	WEIS				0901.0	1500.0	2				IS
	0750	1500	DWIN	0904.3		2							IIIB
			WEIS				0914.2	0915.3	2				IIIG
			WEIS				0917.2	0917.4	2				IIIG
			WEIS				0958.3	0958.8	2				IIIG
			WEIS				1000.2	1002.8	2				IIIG
	0845	1445	BLEN				1005.3	1017.4	3				IIIGG
			WEIS				1006.3	1018.2	3				IIIGG
			LEAR				1006.6	1018.0	1				S
			LEAR				1006.6	1018.0	1				S
			WEIS				1045.6	1046.7	2				IIIG
			WEIS				1048.8	1049.1	2				IIIG
			WEIS				1054.8	1059.6	2				IIIGG
			WEIS				1101.8	1104.3	2				IIIG
			WEIS				1227.2	1228.7	2				IIIGG
			BLEN				1227.2	1228.0	2				IIIG
			BLEN				1245.0	1445 D	2				I DC
			WEIS				1409.5	1411.8	2				IIIG
	1413	2340	HARV										
			WEIS				1413.9	1416.4	2				IIIG
			HARV				1424		2				IIIB
			WEIS				1424.0	1424.2	1				IIIB
			WEIS				1443.7	1443.8	2				IIIB
			HARV				1510	1511	2				I

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06			HARV				1538	1539	2				I
			HARV				1547		2				I
			HARV				1605	1606	2	1605	1606	1	IIIG,I
			HARV				1742		2	1742		1	IIIG
			HARV							1823		2	IIIG
			HARV							1957	1958	1	IIIB
	2038	2400	CULG				2038	2400					IS,W
			CULG				2104	2106					IIIG,W
			HARV				2111	2119	2	2111	2119	1	IIIGG
			PALE				2111.5	2120.2	1				IV
			PALE				2111.5	2120.2	1				IV
			CULG				2112	2121	2	2114.5	2117.5	1	IIIS
			PALE				2120.2	2130.2	1				B
			PALE				2120.2	2130.2	1				B
			CULG				2121	2132					IIIS,W
			CULG				2124.5		1				RS
			CULG							2128	2150	2	SWF
			CULG	2132	2135.5	1							IIIGG
			HARV	2133	2135	2							IIIG
			CULG				2135.5	2138.5	1				II
			CULG				2140	2400					IV W
			HARV	2147		1	2147		1				IIIB
			CULG	2147.5	2148.5	1	2147.5		1				IIIG
			CULG	2158	2158.5	1							DCIM,RS
			HARV				2158		2				IIIG
			LEAR				2204.0	1054.0	1				B
			LEAR				2204.0	1054.0	1				B
			CULG				2214	2356	1				DC,N
			CULG	2224	2250								IN,W
07	0000	0738	CULG				0000	0738					IS,W
			CULG				0000	0220					IV W
			CULG				0040.5	0629					IIIN,W
			CULG				0136	0226	1				N,RS,DP
			CULG				0223.5			0223.5			IIIB,W
			CULG				0224.5	0225	1				IIIG
			CULG				0228	0241	2				II H
			LEAR				0228.8	0237.9	2				CONT
			LEAR				0228.8	0237.9	2				CONT
			CULG				0355.5			0355.5			IIIB,W
	0756	1315	WEIS				0801.0	1456.0	1				IIIN
	1342	1501	WEIS				1009.9	1016.1	2				IIIGG
	1040	1445	BLEN										
			WEIS				1051.4	1051.9	2				IIIG
	0750	1500	DWIN	1057.7	1057.9	1							IIIG
	1413	2345	HARV	1515	1600	1	1540	1940	1				IN
			HARV				1754	1801	3	1754	1801	3	IIIGG
			HARV				1836	1838	2	1838		2	IIIG
			HARV				1923	1925	3	1923	1925	3	IIIG
			PALE				1923.0	1925.0	1				CONT
			PALE				1923.0	1925.0	1				CONT
			HARV				2007	2010	2	2010		2	IIIG
	2038	2400	CULG				2039	2041.5	1				IIIG
			HARV				2039	2042	2	2040	2041	1	IIIG
			CULG				2039.5	2041.5	1				N,RS,DP
			CULG				2045	2125					IN,W
			CULG				2053	2334					IIIN,W
			HARV	2108		1	2108		2				IIIG
			PALE				2108.2	2113.2	1				CONT
			PALE				2108.2	2113.2	1				CONT
			CULG				2108.5		1	2108.5		1	IIIB
			CULG				2113		1	2113		1	IIIB
			HARV				2113		2				IIIG
			CULG	2142	2142.5	2							IIIG
			CULG	2154	2154.5		2154	2154.5					IIIG,W
			CULG							2154	2236		IIIN,W
			CULG	2219	2400								IN,W
			LEAR				2332.3	2332.6	1				CONT
			LEAR				2332.3	2332.6	1				CONT
08	0000	0738	CULG	0109									IIIB,W

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
08			CULG				0133	0657					IIIN,W
			LEAR				0211.5	1054.0	1				B
			LEAR				0211.5	1054.0	1				B
			CULG				0251		1				IIIB
			CULG				0338	0440	1				N,RS,DP
			LEAR				0447.4	0448.1	2				CONT
			LEAR				0447.4	0448.1	2				CONT
			CULG	0447.5	0448	1	0447.5	0448	2	0447.5	0448	2	IIIG
			CULG	0450	0502								IN,W
			CULG				0657	0711					IIIS,W
			CULG				0659	0700	1				IIIG
			LEAR				0659.0	0702.9	2				CONT
			LEAR				0659.0	0702.9	2				CONT
			CULG	0718	0719		0718	0718.5					IIIG,W
			CULG				0718.5		1				IIIB
			CULG				0734	0736	1				IIIG
			WEIS				0903.5	0903.8	1				IIIG
	0750	1500	DWIN	1008	1035	2						IV	
	0754	1503	WEIS				1010.5	1025.0	3			II	HARM
	0845	1445	BLEN	1010.7	1014.5	3	1009.5	1021.0	3			II	
			LEAR				1013.8	1024.9	1			II	
			LEAR				1013.8	1024.9	1			II	
			BLEN	1022.7	1026	1	1022.7	1035	1				IVP
			WEIS				1148.8	1227.6	2				IIIGG
			WEIS				1245.9	1246.1	1				IIIB
			WEIS				1333.3	1333.7	3				IIIG
	1413	2345	HARV										
			HARV				1549		1				IIIBW
			HARV	2027	2029	2	2027	2029	3	2027	2029	3	IIIGG
			PALE				2027.7	2029.7	2				V
			PALE				2027.7	2029.7	2				V
			HARV				2038	2131	2				I
	2039	2400	CULG				2039	2152	1				IIIS
			CULG				2039	2205					IS,W
			CULG				2054	2320	1				N,RS,DP
			CULG	2141	2204								IN,W
			CULG				2152	2351					IIIN,W
			CULG				2208.5		1	2208.5		1	IIIG
			LEAR				2318.2	2320.5	1				CONT
			LEAR				2318.2	2320.5	1				CONT
			CULG				2319.5	2320	1	2319.5	2320	1	IIIG
			CULG							2330	2330.5		IIIB,W
			HARV				2330		1				IIIB
			LEAR				2330.1	2331.1	1				CONT
			LEAR				2330.1	2331.1	1				CONT
09	0000	0739	CULG				0005.5	0010.5					IIIG,W
			CULG				0010.5	0739	1				N,RS,DP
			CULG				0011	0739					IIIN,W
			CULG							0030	0042	1	SWF
			CULG	0031.5	0041	1							IIIN
			CULG	0032.5	0039	2	0032.5	0046.5	2			II	
			LEAR				0150.5	0246.6	1				S
			LEAR				0150.5	0246.6	1				S
			LEAR				0447.8	0448.1	1				CONT
			LEAR				0447.8	0448.1	1				CONT
			LEAR				0510.4	0510.5	1				III
			LEAR				0510.4	0510.5	1				III
			CULG				0524	0524.5	1	0524	0524.5	1	IIIG
			LEAR				0524.0	0530.4	1				CONT
			LEAR				0524.0	0530.4	1				CONT
			CULG				0601.5	0604	1				IIIGG
			LEAR				0601.8	0608.3	1				CONT
			LEAR				0601.8	0608.3	1				CONT
			LEAR				0651.2	0747.3	1				S
			LEAR				0651.2	0747.3	1				S
			CULG	0724.5	0725	2							IIIG
	0750	1049	DWIN										
			LEAR				0758.0	1054.0	1				B
			LEAR				0758.0	1054.0	1				B

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
09	0845	1445	BLEN										
	0753	1505	WEIS				1053.3	1055.1	3				IIIGG
	1115	1525	DWIN										
			WEIS				1224.0	1224.6	2				IIIG
			WEIS				1242.3	1243.7	2				IIIG
			WEIS				1248.2	1248.0	1				IIIG
			WEIS				1320.4	1320.5	2				IIIB
			WEIS				1333.9	1334.3	2				IIIG
			WEIS				1336.7	1342.6	2				IIIGG
			WEIS				1348.7	1349.4	2				IIIG
			WEIS				1434.1	1435.1	2				IIIG
	1413	2345	HARV				1834	1835	2	1834	1835	2	IIIG
			HARV				2016		1	2016		1	IIIB
	2039	2400	CULG				2051	2158					IIIN,W
			CULG	2108	2109	1							I
			CULG	2112.5	2114	1							IIIG
			HARV				2113	2114	1	2113	2114	1	IIIG
			CULG	2120	2121	1	2120	2122	2				IIIG
			HARV				2120	2122	2	2120	2122	1	IIIG
	2228	2400	MANI										
			LEAR				2300.9	2301.4	2				CONT
			LEAR				2300.9	2301.4	2				CONT
			CULG				2301	2301.5	3	2301	2301.5	2	IIIG
			HARV				2301		2	2301		2	IIIG
			CULG				2302.5			2302.5			IIIB,W
			CULG				2308.5	2310	1	2308	2311	1	IIIG,V
			LEAR				2309.0	1054.0	1				B
			LEAR				2309.0	1054.0	1				B
			CULG				2348.5		1	2348.5		2	IIIG
10			MANI										
			MANI										
	0000	0739	CULG	0001	0037								IN,W
			CULG				0023	0719					IIIN,W
			CULG	0130.5	0131								IIIG,W
			CULG							0209	0512		IIIN,W
			CULG				0232.5		3	0232.5		2	IIIB
			LEAR				0232.5	0233.0	2				CONT
			LEAR				0232.5	0233.0	2				CONT
			CULG	0245	0739								IN,W
			CULG				0258.5		2	0258.5		2	IIIB
			LEAR				0340.8	0348.0	2				CONT
			LEAR				0340.8	0348.0	2				CONT
			CULG	0343	0347	1							I
			CULG				0343		1				IIIB,U
			CULG	0344.5	0347	2	0345	0347.5	2	0345.5	0347	2	IIIGG
			LEAR				0344.7	0045.0	1				III
	0000	0910	MANI							0344.7	0345.0	1	III
			LEAR				0344.7	0045.0	1				III
			CULG				0420.5	0422	3	0420.5	0422	2	IIIGG
			LEAR				0420.5	0422.1	2				CONT
			LEAR				0420.5	0422.1	2				CONT
			CULG				0452		2	0452		2	IIIB
			CULG	0502.5	0710	3						IV	
			CULG							0506	0535	2	SWF
			CULG				0507	0540	3			II	
			LEAR				0508.0	0516.0	2			II	
			LEAR				0508.0	0516.0	2			II	
			LEAR				0510.4	0520.3	3			IV	
			LEAR				0510.4	0520.3	3			IV	
			LEAR				0512.5	0516.5	1				III
			LEAR				0512.5	0516.5	1				III
			CULG				0513	0515.5	2	0513	0515.5	1	IIIG
			CULG				0514	0739	3			IV	
			CULG							0515	0520	2	II
			CULG							0533	0605	1	IV
			CULG				0600	0739	1				IS
			CULG							0612.5		1	IIIB
			CULG	0625	0627	3	0625.5	0626	1				IIIGG
			CULG	0629.5	0630	2							IIIG

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
10			CULG	0633	0634.5	2							IIIG
			CULG				0652	0653	1				IIIG
			CULG	0715.5	0716	1							IIIG
			CULG	0721	0722	1							IIIG
	0750	1515	DWIN	0759.8	0759.9	1							IIIG
			LEAR				0759.8	0801.7	2				V
			LEAR				0759.8	0801.7	2				V
	0754	1202	WEIS				0809.8	0810.0	2				IIIG
			WEIS				0959.5	0959.7	1				IIIG
	0845	1445	BLEN				1011.2	1011.4	2				IIIG
			WEIS				1011.3	1011.8	3				IIIG
			WEIS				1033.8	1034.0	1				IIIB
			WEIS				1035.9	1036.4	2				IIIG
			WEIS				1132.5	1132.7	1				IIIG
	1215	1506	WEIS				1238.5	1238.6	1				IIIB
			WEIS				1353.3	1354.1	2				IIIG
			WEIS				1403.4	1403.6	1				IIIG
			WEIS				1417.7	1417.8	1				IIIB
			WEIS				1447.0	1447.3	2				IIIG
	1413	2355	HARV				1535	1840	1				INW
			HARV	1616		2	1616		2				IIIG
			HARV	1803		1	1801	1809	2	1801	1809	2	IIIG
			HARV				1918	1919	1	1918	1919	1	IIIGW
			HARV				1939	1940	1	1939	1942	1	IIIG
			HARV				1951		1				IIIB
			HARV				2000	2002	2				IIIG
			HARV				2036		1				IIIB
	2040	2400	CULG				2040	2400					IS,W
			CULG				2042	2321					IIIN,W
			HARV				2043	2044	2				IIIG
			CULG				2043.5		1				IIIG
			CULG	2054	2214								IN,W
			CULG	2138.5	2139								IIIG,W
			CULG							2158	2321		IIIN,W
	2220	2400	MANI										
			HARV				2231		1				IIIB
			CULG							2236	2252	1	SWF
			HARV				2306	2307	1				IIIG
			CULG				2308.5		1	2308.5		1	IIIB
			LEAR				2308.5	2308.8	1				V
			LEAR				2308.5	2308.8	1				V
11	0000	0920	MANI										
	0000	0740	CULG				0000	0355					IN,W
			CULG	0002	0002.5	1							IIIG
			CULG				0002.5	0655					IIIN,W
			LEAR				0002.6	1055.0	1				B
			LEAR				0002.6	1055.0	1				B
			CULG				0036	0050.5	1				N,RS,DP
			CULG				0135	0135.5	1	0135	0135.5	1	IIIB
			CULG				0227	0227.5	2	0227	0227.5	2	IIIG
			CULG				0242.5			0242.5			IIIG,W
			CULG	0354	0740	1	0355	0740	1				IS
			CULG				0408	0409	1				IIIG
			CULG				0540	0540.5	1				IIIG
			CULG	0547.5	0549	2	0547.5	0548	1				IIIG
			CULG				0653.5		2				IIIB
	0753	1508	WEIS				0802.3	0804.3	3				IIIG
			LEAR				0803.2	0804.3	2				CONT
			LEAR				0803.2	0804.3	2				CONT
			WEIS				0810.3	0813.2	2			II	HARM
			WEIS				0826.1	0827.3	2				IIIG
	0750	1530	DWIN	0914.5	0916.9	2							IIIG
	0845	1445	BLEN	0915.3	0917.5	2	0915.3	0917.5	2				IIIGG
			WEIS				0915.4	0917.6	2				IIIGG
			WEIS				1007.3	1007.5	1				IIIB
			WEIS				1043.7	1044.7	2				IIIG
			WEIS				1203.1	1203.4	2				IIIG
			WEIS				1250.9	1251.3	3				IIIG
			WEIS				1343.4	1343.5	1				IIIG

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
11			WEIS				1355.8	1356.6	2				IIIG
	1413	2346	HARV				1437	1930	1				IN
			WEIS				1443.0	1505.0	1				IIIN
			HARV				1511	1512	2				IIIG
			HARV				1544		2	1544		1	IIIG
			HARV				1657		2	1657		2	IIIB
			HARV	1852		2	1850	1854	2	1850	1854	3	IIIGG
			HARV				1905		2	1905		1	IIIB
	2040	2400	CULG				2042		1				IIIB
			HARV				2042		1	2042		1	IIIB
			CULG							2042	2349		IIIN,W
			CULG				2048	2222					IIIN,W
			CULG				2050.5	2051	2	2050.5	2051	2	IIIB
			HARV				2051		2	2051		2	IIIG
			CULG				2108.5		1				IIIB
			CULG	2150.5	2151	1							I
			CULG				2222.5		1	2222.5		1	IIIB
			CULG	2225	2400								IN,W
	2229	2400	MANI										
			CULG				2311	2312.5	2	2311	2312.5	2	IIIG
			LEAR				2311.3	2312.7	1				CONT
			LEAR				2311.3	2312.7	1				CONT
12	0000	0922	MANI										
	0000	0740	CULG	0000	0740								IN,W
			CULG	0034.5	0035	3							IIIG
			CULG				0133	0135	1				IIIG
			CULG				0159	0740		0159	0706		IIIN,W
			CULG	0312	0314.5	1							IIIGG
			CULG				0348.5		1	0348.5		1	IIIB
			CULG				0411		1	0411		1	IIIB
			CULG				0459.5		1	0459.5		1	IIIB
			CULG				0542.5		1	0542.5		1	IIIB
			CULG	0557.5	0558	1							IIIG
			CULG				0629.5	0630	1				IIIG
			CULG				0650.5		1				IIIB
			CULG				0706		1				IIIB
			CULG	0711.5	0712	1							IIIG
			LEAR				0741.2	0742.9	2				CONT
			LEAR				0741.2	0742.9	2				CONT
	0845	1445	BLEN				0850.2	0850.4	2				IIIB
	0906	1510	WEIS				0922.0	0922.3	2				IIIB
			WEIS				0938.3	0938.5	1				IIIG
			WEIS				0957.3	0957.4	2				IIIB
			WEIS				1014.5	1014.8	2				IIIG
			WEIS				1024.9	1025.1	1				IIIB
	0750	1530	DWIN	1028.3	1028.7	2							IIIG
			BLEN	1028.5	1028.6	1							IIIB,RS
			WEIS				1051.8	1053.2	2				IIIG
			BLEN	1123.8	1124.6	1							DCIM
			DWIN	1123.9	1124.6	2						IV	
			BLEN	1152.0	1152.3	1							DCIM
			WEIS				1153.7	1154.1	2				IIIB
			BLEN	1154.5	1157.3	2	1153.8	1157.3	2				IIIG,DCIM
			WEIS				1306.0	1306.7	1				IIIG
			BLEN	1311.5	1311.6	1							DCIM
			DWIN	1311.5	1311.6	2							IIIG
			WEIS				1311.7	1312.7	2				IIIG
			WEIS				1341.7	1341.9	2				IIIB
			WEIS				1359.4	1401.9	3				IIIGG,RS
			BLEN	1359.5	1400.0	2							DCIM
			DWIN	1359.5	1402.8	2							IIIG
			BLEN				1359.8	1400.2	2				IIIG
	1413	2350	HARV										
			WEIS				1418.7	1418.8	1				IIIB
			HARV				1731		2	1731		1	IIIG
			HARV				1752	1758	2				IIIG
			HARV				1807		2	1807		2	IIIG
			HARV				1911		2	1911		2	IIIG
			HARV				1930	1936	2	1930	1936	3	IIIG

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
12			HARV	2014		2	2014	2015	2	2014	2015	2	IIIG
			HARV				2020	2023	2	2020	2023	3	IIIG
	2040	2400	CULG				2054	2355.5		2135.5	2354		IIIN,W
			CULG	2138.5	2341								IN,W
			CULG	2154	2155.5	1	2154	2156.5	2	2154	2156	2	IIIGG,V
			HARV				2154	2156	2	2154	2156	2	IIIG
	2228	2400	MANI										
			HARV				2333		1				IIIB
			CULG				2333		1				IIIB
			LEAR				2333.2	2336.6	1				CONT
			LEAR				2333.2	2336.6	1				CONT
			CULG				2336		1	2336		1	IIIB
			HARV				2351	2352	2				IIIG
			LEAR				2351.4	2353.5	2				CONT
			LEAR				2351.4	2353.5	2				CONT
			CULG	2356	2356.5	1	2356	2356.5	2	2356	2356.5	1	IIIG
			CULG				2358.5		1				IIIB
13	0000	0740	CULG				0007	0702					IIIN,W
			LEAR				0018.6	0022.2	2				CONT
			LEAR				0018.6	0022.2	2				CONT
			CULG	0019.5	0020	1	0018.5	0021.5	2	0018.5	0021	2	IIIGG,V
			LEAR				0019.9	0020.1	1				III
			LEAR				0019.9	0020.1	1				III
	0000	0905	MANI							0019.9	0020.1	1	III
			CULG				0101	0101.5	1				UNCLF
			CULG	0101	0101.5	1	0101	0101.5	2	0101	0101.5	1	IIIB
			CULG							0104	0537		IIIN,W
			CULG				0110	0110.5	1				IIIG
			CULG	0153.5	0154	2	0153.5	0154	2	0153.5	0154	2	IIIG
			LEAR				0254.6	0255.1	1				V
			LEAR				0254.6	0255.1	1				V
			LEAR				0308.6	0308.9	1				V
			LEAR				0308.6	0308.9	1				V
			CULG							0322	0409	2	SWF
			LEAR				0330.8	0343.1	1				S
			LEAR				0330.8	0343.1	1				S
			CULG				0339.5	0340	2	0339.5	0340	1	IIIG
			CULG				0342	0342.5	1	0342	0342.5	1	IIIG
			CULG	0411	0740								IN,W
			LEAR				0429.2	0431.0	1				CONT
			MANI							0429.2	0431.0	1	IIIG
			LEAR				0429.2	0431.0	1				CONT
			CULG	0442	0443.5	1							IIIG
			CULG				0451.5	0452	2	0451.5	0452	2	IIIG
			LEAR				0451.5	0452.3	2				CONT
			LEAR				0451.5	0452.3	2				CONT
			MANI							0451.8	0452.0	1	III
			LEAR				0451.8	0452.0	1				III
			LEAR				0451.8	0452.0	1				III
			CULG	0523		1	0523	0523.5	1				IIIG
			LEAR				0523.0	0523.6	1				CONT
			LEAR				0523.0	0523.6	1				CONT
			LEAR				0536.3	0549.3	1				S
			LEAR				0536.3	0549.3	1				S
			CULG				0545.5	0546	2				IIIG
			LEAR				0545.7	0546.3	2				CONT
			LEAR				0545.7	0546.3	2				CONT
			LEAR				0622.0	1054.0	1				B
			LEAR				0622.0	1054.0	1				B
			CULG				0651.5	0653	2				IIIG
			CULG	0732		1	0732	0732.5	2				IIIG
			LEAR				0732.0	0732.4	2				V
			LEAR				0732.0	0732.4	2				V
			LEAR				0745.1	0745.9	2				CONT
			LEAR				0745.1	0745.9	2				CONT
			MANI							0745.8	0746.0	1	III
	0750	1500	DWIN	0928.4	0928.7	1							IIIG
	1004	1510	WEIS				1013.6	1014.9	2				IIIG
			WEIS				1017.9	1023.4	2				IIIGG

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13			WEIS				1034.7	1035.1	2				UHARM
			WEIS				1049.8	1056.0	2				IIIGG
			WEIS				1101.4	1101.5	1				IIIB
			DWIN	1104.5	1107.0	1							IIIG
	1413	2340	HARV				1434	1435	1				IIIGW
			WEIS				1434.2	1435.7	2				IIIG
			HARV	1620	1621	2							IIIG
			HARV				1647	1648	2	1647	1648	2	IIIG
			HARV				1704		2	1704		2	IIIG
			HARV	1920	1921	2							IIIG
			HARV							1937	1938	2	IIIB
			HARV				2038	2039	2	2038	2039	2	IIIG
	2041	2400	CULG				2041	2101					IIIS,W
			CULG	2041	2115		2041	2106					IS,W
			HARV				2048	2049	2				IIIG
			HARV				2058	2059	1	2058	2059	1	IIIG
			CULG				2058.5	2059	1				IIIG
			CULG	2115	2400								IN,W
			HARV	2122	2123	2	2122	2123	1				IIIG
			CULG	2122	2123	1							IIIG
			CULG				2157	2157.5	1				IIIG
	2229	2400	MANI										
			LEAR				2257.6	2301.1	2				CONT
			LEAR				2257.6	2301.1	2				CONT
			CULG				2320	2321.5	1				IIIG
			LEAR				2320.4	2321.5	1				CONT
			LEAR				2320.4	2321.5	1				CONT
14	0000	0923	MANI										
	0000	0741	CULG				0042		1				IIIB
			LEAR				0042.2	0042.8	1				CONT
			LEAR				0042.2	0042.8	1				CONT
			CULG	0052.5		1							IIIB
			CULG	0203									IIIB,W
			LEAR				0223.5	0224.9	1				CONT
			LEAR				0223.5	0224.9	1				CONT
			CULG				0317	0317.5	2	0317	0317.5	2	IIIB,V
			LEAR				0317.2	0318.0	2				CONT
			LEAR				0317.2	0318.0	2				CONT
			CULG	0420.5		1	0420.5	0421	3				IIIB
			LEAR				0420.5	0421.6	2				CONT
			LEAR				0420.5	0421.6	2				CONT
			CULG				0421	0429		0421	0456		IIIN,W
			CULG	0421.5		1							IIIB
			CULG	0524.5		1							IIIB
			CULG	0529	0529.5								IIIG,W
			CULG				0543.5	0545	1	0544.5	0545	1	IIIG,V
			LEAR				0543.6	0545.0	2				CONT
			LEAR				0543.6	0545.0	2				CONT
			CULG							0622	0635	1	SWF
			CULG	0720	0720.5		0720	0720.5					IIIG,W,U
			LEAR				0811.8	0813.3	1				CONT
			LEAR				0811.8	0813.3	1				CONT
			LEAR				0817.5	0818.4	1				CONT
			LEAR				0817.5	0818.4	1				CONT
	0751	1512	WEIS				1216.4	1218.3	2				IIIG
			WEIS				1221.2	1224.1	3				IIIGG
	0942	1535	DWIN	1222.0	1225.4	2							IIIG
			WEIS				1315.7	1316.6	2				IIIG,RS
	1340	1445	BLEN										
			WEIS				1353.8	1357.6	2				IIIGG
			DWIN	1357.3	1358.3	1							IIIG
	1413	2346	HARV				1637	1638	2	1637	1638	2	IIIG
			HARV				1846		1				IIIB
			HARV				1852		1				IIIG
	2041	2400	CULG	2041	2120	1	2041	2131	1			IV	
			HARV	2043	2118	3	2043	2118	2			IV	
			CULG				2109	2111	1			II	POSS
			CULG				2128.5						IIIB,W
	2241	2400	MANI										

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
15	0000	0650	MANI										
	0000	0741	CULG				0126		2				IIIB
			LEAR				0126.2	0127.5	1				CONT
			LEAR				0126.2	0127.5	1				CONT
			CULG				0127.5						IIIB,W
			CULG				0140.5		1				IIIB
			CULG	0147.5	0148		0147.5	0148					IIIG,W
			LEAR				0215.0	0219.2	1				CONT
			LEAR				0215.0	0219.2	1				CONT
			CULG	0243	0244.5	1	0243	0245	2	0244	0245	2	IIIG,V
			LEAR				0243.9	0246.9	2				CONT
			LEAR				0243.9	0246.9	2				CONT
			CULG	0331	0741								IN,W
			LEAR				0331.8	0332.4	1				CONT
			LEAR				0331.8	0332.4	1				CONT
			CULG	0345.5	0346.5								IIIG,W
			CULG				0455.5	0459		0455.5	0459		IIIGG,W
			LEAR				0455.8	0500.1	2				CONT
			LEAR				0455.8	0500.1	2				CONT
			CULG				0457	0458	2				IIIG
			LEAR				0508.4	0509.0	1				CONT
			LEAR				0508.4	0509.0	1				CONT
			CULG				0508.5	0509	1	0508.5	0509	1	IIIB
			CULG				0535	0649					IS,W
			CULG				0539.5	0710					IIIN,W
			LEAR				0817.5	0818.4	1				CONT
			LEAR				0817.5	0818.4	1				CONT
	0749	1512	WEIS				0817.6	0818.9	2				IIIG
	0855	1445	BLEN				0856.1	0856.3	2				IIIG
			WEIS				0856.3	0856.5	2				IIIG
			WEIS				0857.8	0857.9	1				IIIB
			LEAR				0908.7	0909.8	1				CONT
			LEAR				0908.7	0909.8	1				CONT
			WEIS				1118.5	1119.1	2				IIIG
			BLEN	1118.7	1119.1	3	1118.7	1119.1	2				IIIG
	0750	1530	DWIN	1118.8	1118.9	1							IIIG
			BLEN				1134.2	1134.4	2				IIIB
			WEIS				1134.4	1134.5	2				IIIB
			BLEN				1203.2	1205.3	3				IIIG
			WEIS				1203.4	1205.3	2				IIIG
	1413	2346	HARV	1438		1							IIIBW
	2041	2400	CULG				2041	2325					IN,W
			CULG	2324	2324.5		2324.5	2325					IIIG,W
16	0000	0731	CULG	0031.5									IIIG,W
			CULG				0152.5		1				IIIB
			CULG							0152.5			IIIB,W
			LEAR				0152.6	0153.3	1				CONT
			LEAR				0152.6	0153.3	1				CONT
			CULG				0324						IIIB,W
			CULG				0333.5	0334.5	2	0334	0334.5	1	IIIG
			LEAR				0333.6	0335.1	2				V
			LEAR				0333.6	0335.1	2				V
			PALE				0333.8	0334.1	1				III
			PALE				0333.8	0334.1	1				III
			CULG	0427	0731								IN,W
			CULG	0650.5			0650.5	0652					IIIG,W
			LEAR				0651.0	0652.2	1				CONT
			LEAR				0713.7	0720.4	1				CONT
			LEAR				0721.0	1055.0	1				B
	0749	0803	WEIS										
			LEAR				0827.3	0835.0	1				II
	0808	1515	WEIS				0943.6	0943.8	2				U
	0750	1530	DWIN	1011.3	1013.0	1							IV
			WEIS				1012.3	1014.7	2				IIIG
			LEAR				1012.3	1014.4	1				CONT
	0845	1445	BLEN				1217.0	1217.6	2				IIIG
			WEIS				1217.2	1217.7	2				IIIG
	1413	2345	HARV				2036	2039	3	2036	2039	3	IIIGG,V
			PALE				2036.4	2039.5	2				V

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DAY	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
16			CULG				2042	2141					IS,W
			HARV				2042	2052	2			II	
	2042	2400	CULG				2042	2052	2			II	
			CULG	2054	2400								IN,W
			CULG				2110	2156					IIIN,W
			CULG				2141	2400					IN,W
			CULG				2225.5			2225.5			IIIB,W
17	0000	0742	CULG	0000	0057		0000	0137					IN,W
			LEAR				0001.5	0008.0	1				CONT
			CULG				0003.5	0006.5	1				IIIG
			CULG				0033	0521					IIIN,W
			LEAR				0102.0	0108.9	1				CONT
			CULG	0107.5			0107.5	0108		0108	0109		IIIG,V
			CULG	0113	0113.5		0113	0113.5					IIIG,W
			LEAR				0206.8	0208.6	2				CONT
			CULG				0208	0208.5	1	0208	0208.5	1	IIIG
			LEAR				0230.0	0900.0	1				B
			CULG							0237	0327		IIIN,W
			LEAR				0816.3	0833.9	1			II	
	0747	1517	WEIS				0821.5	0830.5	1			II	
	0845	1445	BLEN										
	0950	1530	DWIN										
			WEIS				1053.6	1054.3	2				IIIG
	2042	2400	CULG							2154.5	2155	1	IIIB
			CULG				2237		1				IIIB
	1413	2345	HARV				2237		2				IIIB
			CULG				2256		1	2256		1	IIIB
			CULG				2309	2310.5	1	2309.5	2311	2	IIIG,V
			LEAR				2309.5	2310.4	1				CONT
			PALE				2310.0	2315.2	1				CONT
			CULG				2311.5	2312	1	2311.5	2312.5	2	IIIG
			CULG				2314.5	2315.5	1	2314.5	2315.5	1	IIIG
			CULG				2319						IIIB,W
			CULG							2319.5	2320	1	IIIB
			CULG				2325	2326	2	2325	2328	2	IIIG,V
			CULG							2342.5	2343.5	1	IIIG
			CULG				2342.5	2343.5					IIIG,W
			CULG	2345	2345.5	1	2345	2346	1	2345	2347	2	IIIG,V
			CULG				2357			2357			IIIB,W
18	0000	0742	CULG				0002	0645					IIIN,W
			CULG				0002.5	0003	3	0002.5	0003.5	3	IIIG,V
			PALE				0002.5	0002.9	1				V
			CULG				0006	0007	3	0006.5	0007.5	3	IIIG,V
			PALE				0006.3	0006.8	2				V
			CULG	0010	0742								IN,W
			LEAR				0034.5	1055.0	1				B
			CULG				0110.5		1				IIIB,U
			CULG				0125.5		2	0125.5	0126	2	IIIB,V
			LEAR				0142.2	0144.7	2				CONT
			CULG	0144		1	0142	0144.5	2	0142.5	0145	2	IIIG,V
			CULG				0347.5	0348	1	0347.5	0348	1	IIIG
			CULG	0418.5	0419	1	0418.5	0419.5	3				IIIG
			CULG	0634.5		1	0634.5		1				IIIB
	0746	1308	WEIS				0826.3	0833.4	2				IIIGG
	0845	1455	BLEN				0831.0	0833.4	2				IIIGG
			LEAR				0831.1	0832.5	2				CONT
			WEIS				1003.0	1005.7	1				IIIGG
			BLEN				1052.9	1053.4	1				IIIG
			WEIS				1052.9	1053.5	1				IIIG
			WEIS				1126.3	1126.7	2				IIIG
			WEIS				1129.7	1129.4	1				IIIG
			WEIS				1131.0	1132.1	1				IIIG
			WEIS				1133.7	1136.1	3				IIIGG
			BLEN				1134.7	1135.7	2				IIIGG
			WEIS				1206.4	1206.7	2				IIIG
	0740	1435	DWIN	1414.3		1							IIIB
	1413	2345	HARV				1452		2				IIIG
			BLEN				1452.0	1452.4	2				IIIGG

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				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
18			HARV				1519		2				IIIG
			HARV				1523	1524	1				IIIG
			HARV	1528		2	1528		3	1528		2	IIIG
			HARV				1530	1531	2				IIIG
			HARV				1544	1545	2	1544	1545	1	IIIG
			HARV				1616	1619	2	1619		2	IIIG
			HARV				1633	1635	2	1635		2	IIIG
			HARV				1828	1834	2	1828	1834	2	IIIGG
			PALE				1828.5	1833.4	1				III
			HARV				1915		2	1915		2	IIIG
			HARV				1954	1955	1	1954	1955	1	IIIG
			HARV	2013		2	2013		2				IIIG
	2042	2400	CULG	2042	2400								IS,W
			CULG				2044	2211					IIIN,W
			CULG	2047	2047.5								IIIG,W
			HARV	2124	2125	2							IIIG
			CULG	2124.5	2125.5	1							IIIG
			HARV				2136	2137	2	2136	2137	2	IIIG
			CULG				2136	2136.5	2				IIIG
			PALE				2136.4	2136.6	1				III
			CULG	2222.5	2223	1							IIIG
			HARV	2223		2							IIIG
			LEAR				2325.1	0005.9	2				S
			CULG				2343		1	2343		1	IIIB
			LEAR				2343.0	2343.2	1				III
19	0000	0742	CULG	0000	0325								IN,W
			CULG	0100	0101	2							IIIG
			CULG	0101	0110	1							CONT
			LEAR				0108.0	1055.0	1				B
			CULG				0219.5						IIIB,W
			CULG				0223.5	0224	1	0223.5	0224	1	IIIG
			CULG	0325	0742								IS,W
			CULG				0359.5		1				IIIB
			CULG				0615.5	0616					IIIG,W
			CULG	0731.5		1	0731.5		2				IIIB
	0735	1545	DWIN										
	0840	1400	BLEN										
	1413	2340	HARV										
	2042	2400	CULG	2311	2311.5								I,W
			CULG	2337.5									I,W
20	0000	0743	CULG	0223		1							IIIG
			CULG	0320	0323								I,W
			CULG				0321.5						IIIB,W
			CULG	0519	0743								IN,W
			CULG	0546.5									IIIB,W
	0742	1345	DWIN										
	1413	0000	HARV										
	2043	2400	CULG										
21	0000	0743	CULG	0246	0248	2							IIIN
			LEAR				0339.5	0353.9	1				S
			CULG				0354			0354			IIIB,W
			CULG	0635.5	0636								I,W
	0740	1545	DWIN										
			LEAR				0836.2	0845.5	1				II
			LEAR				0848.6	1054.0	1				B
	1310	1523	WEIS										
	2045	2400	CULG				2048	2050					I,W
			CULG				2126.5						IIIB,W
	1413	2345	HARV				2127		1				IIIB
			CULG				2209.5	2210	1	2209.5	2210	2	IIIG
			CULG				2225						IIIB,W
			CULG				2239						IIIB,W
22	0000	0743	CULG				0003	0743					IIIN,W
			CULG				0425.5		1				IIIB
			CULG				0720.5	0721	2				UNCLF
	0740	1450	DWIN										

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22	0743	1525	WEIS										
	1413	2345	HARV	1534	1535	2							IIIG
			HARV				1704		2	1704		2	IIIG
			HARV				1821	1822	2	1821	1822	2	IIIG,V
			PALE				1821.0	1822.3	1				V
			HARV				1952	1953	2	1952	1953	2	IIIG,V
			PALE				1952.4	1953.5	2				V
			PALE				2020.7	2021.3	2				V
			HARV				2021		3	2021		2	IIIG,V
	2043	2400	CULG				2043	2046	3	2044.5	2045	1	IIIG,V
			PALE				2043.2	2045.0	2				CONT
			HARV	2044	2045	2	2044	2045	2	2044	2045	2	IIIG,V
			CULG				2129	2129.5					IIIG,W
			CULG	2238									IIIB,W
23	0000	0744	CULG	0151	0151.5	1							FAST DRIFT
			LEAR				0202.6	0210.5	2				CONT
			CULG	0205	0207	1	0203	0211.5	1	0203	0211.5	1	IIIS
			CULG				0206.5	0207	2	0206.5	0207	2	IIIG
			CULG				0248						IIIB,W
			LEAR				0248.3	0250.1	1				CONT
			CULG				0249.5		1	0249.5		1	IIIB
			CULG	0323	0744								IN,W
			CULG				0330.5	0333	2	0330.5	0332.5	2	IIIG
			LEAR				0330.8	0336.6	2				CONT
			CULG				0335	0336	1				IIIG
			LEAR				0358.5	0401.3	1				CONT
			LEAR				0439.9	0448.6	2				CONT
			CULG				0440	0448	2	0440	0448	1	IIIN
			CULG	0445	0445.5	1	0445	0445.5	3	0445	0445.5	3	IIIG
			CULG	0536	0536.5	1							IIIG
			CULG				0542	0548	1				IIIN
			LEAR				0542.2	0548.2	2				CONT
			CULG	0545.5	0546	1	0545.5	0546	2	0545.5	0546	2	IIIB
			CULG	0617	0620	1	0617	0620	3	0617	0617.5	1	IIIG,V
			LEAR				0617.2	0619.9	3				CONT
			LEAR				0623.9	0624.1	1				III
			LEAR				0713.0	1055.0	1				B
	0735	1055	DWIN	0745.6	0749.6	2							IIIG
			LEAR				0747.1	0749.2	2				CONT
	0742	1526	WEIS				0747.2	0748.8	1				IIIG
			WEIS				0751	1154	1				IN
			WEIS				0915.6	0915.8	1				IIIG
			WEIS				0921.5	0922.7	2				IIIG
			WEIS				1108.9	1109.9	2				IIIG
			WEIS				1251.2	1254.3	2				IIIG
	1130	1550	DWIN	1251.4	1254.0	1							IIIG
	1413	2345	HARV				1440		2				IIIG
			HARV				1610	1611	2	1610	1611	2	IIIG
			HARV				1713		1	1713		1	IIIG
			HARV	1733	1736	2	1736		2	1736		2	IIIG,V
			HARV				1737	1743	2				II
			HARV	1757	1758	1	1757	1758	2	1757	1758	2	IIIG
			HARV				1857	1904	1	1857	1904	1	IIIG
			HARV				1911	1912	2	1911	1912	2	IIIG
			HARV				2015		1				IIIB
			PALE				2028.8	2029.2	1				V
			HARV				2029		2	2029		2	IIIG
	2044	2400	CULG				2044.5	2329	2	2044.5	2400	2	IIIN
			PALE				2044.7	2044.8	1				V
			PALE				2054.9	2055.4	1				III
			CULG	2108	2400								IS,W
			CULG				2113	2400					IIIN,W
			HARV				2114		1				IIIGW
			PALE				2307.0	2309.8	1				CONT
			CULG				2307.5	2308	3	2307.5	2308	3	IIIG
			HARV				2309	2310	2				IIIG
24			CULG							0000	0200	1	IIIN
	0000	0744	CULG	0000	0045	1							IS

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DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
24			CULG				0012	0013	2	0012	0013	2	IIIG
			CULG	0014.5	0015	1	0014.5	0015	2	0014.5	0015	2	IIIG
			CULG				0024	0024.5		0024	0024.5		IIIG,W
			CULG	0045	0125		0041	0215					IS,W
			CULG				0049	0650					IIIN,W
			PALE				0058.9	0107.2	1				CONT
			CULG				0059		1				IIIB
			CULG				0100.5	0104.5	1	0100.5	0104.5	1	IIIG
			LEAR				0106.0	0107.3	2				CONT
			CULG	0106.5	0107	1	0106	0107	2	0106	0107	2	IIIG
			CULG	0111			0111	0111.5					IIIG,W
			CULG	0125	0744								IN,W
			CULG							0149	0149.5		IIIN,W
			CULG				0158	0200	1	0158	0200	1	IIIG
			CULG				0629		1	0629		1	IIIB
			CULG	0643	0643.5	1	0643		1				IIIG
	0740	1019	DWIN										
	0740	1528	WEIS				1108.0	1108.1	1				IIIB
			WEIS				1206	1500	1				IN
			WEIS				1409.5	1409.7	1				IIIG
			WEIS				1411.7	1411.9	1				IIIG
	1413	0000	HARV				1413	0000	2				IC
	1433	1600	DWIN										
			WEIS				1437.7	1438.9	2				IIIG
			WEIS				1441.1	1441.3	2				IIIG
			WEIS				1447.3	1447.6	1				IIIG
			HARV				1652	1654	2	1652	1654	1	IIIG
			HARV				1801		2	1801		1	IIIG
	2044	2400	CULG				2044	2235	2				IS,C,DC
			CULG				2044	2400					IIIN,W
			CULG	2044	2400	1							IS,DC
			CULG				2235	2400	1				IS,DC
25			CULG				0000	0744					IIIS,W
	0000	0744	CULG				0000	0230	1				IS
			CULG	0000	0744								IS,W
			CULG				0031.5			0031.5	0032		IIIG,W
			CULG							0100.5	0101		IIIG,W
			CULG				0143	0143.5	1	0143	0143.5	1	IIIG
			CULG	0146.5	0147	1							IIIG
			CULG				0210		1				IIIB
			CULG				0230	0545					IS,W
			CULG				0450	0450.5	1	0450.5	0451	1	IIIG
			CULG				0457.5	0459	1				IIIG
			CULG				0457.5	0502	1				UNCLF
			LEAR				0630.5	0633.8	3				CONT
			CULG				0630.5	0633	3	0631	0632.5	3	IIIG,V
	0740	1600	DWIN										
	0738	0819	WEIS				0754	1459	1				IIIN
			LEAR				0841.0	0859.4	1			II	
			WEIS				0932	1521	2				IN
	0820	1530	WEIS	0949.4	0949.7	1							IIIG
	1400	2345	HARV	1425	1434	1	1410	2345	2				I,C
			WEIS				1429.7	1429.9	2				IIIG
			WEIS				1444.1	1446.2	3				IIIGG
			HARV	1446	1447	2	1444	1447	2				IIIGG
			HARV	1545	1546	2	1545	1546	2				IIIB
			HARV	1550		2	1550		2				IIIB
			HARV				1648	1649					IIIG
			HARV	1657			1657	1658	2				IIIG
			HARV				1815		2	1815		2	IIIG
			PALE				1818.8	1849.2	1				III
			HARV				1819	1820	2	1819	1820	2	IIIG,V
			PALE				1819.0	1820.1	1				V
			HARV				1849		2	1849		2	IIIG
			HARV				1905	1907	2	1905	1907	2	IIIG,V
			PALE				1905.6	1907.0	2				V
	2044	2400	CULG	2044	2058.5								IS,W
			HARV	2058	2109	3	2058	2109	2			IV	
			HARV	2058	2102	3	2058	2102	2	2100	2102	2	IIIGG,V

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JANUARY 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
25			CULG	2058.5	2335	2							IV P
			CULG				2059	2319					IIIN,W
			HARV				2100	2104	2	2100	2104	2	II
			CULG				2100.5	2101	2				IIIG
			CULG				2101	2111	2				II
			HARV	2105	2107	2	2105	2107	2	2105	2107	2	IIIG,V
			HARV				2105	2113	2	2105	2108	2	II
			PALE				2105.0	2109.0	2				V
			CULG				2111	2129.5					II W
			HARV	2116	2320	3	2116	2320	1				IV,N
			CULG				2128	2250	2				IV
			PALE				2128.0	2135.4	2				II
			CULG				2129	2137	1	2136.5	2143.5	2	II
			HARV	2135		2	2135		2				IIIG
			CULG				2135.5	2136	2				IIIG
			HARV				2137	2141	2	2137	2141	2	II
			CULG				2137	2141	2				II
			CULG							2153	2247	1	IIIN,RS
			HARV				2157	2200	2				IIIGG
			CULG	2157	2157.5	1	2157	2157.5	1	2157	2157.5	1	IIIG
			CULG	2158.5	2159	1	2158.5	2159	1	2158.5	2159	1	IIIG
			CULG				2159.5	2200	2				IIIG
			LEAR				2217.0	1053.0	1				B
26	0000	0745	CULG				0000	0246					IN,W
			CULG				0016.5	0018	1	0017	0017.5	1	IIIG
			PALE				0016.8	0017.7	1				V
			CULG				0045	0745					IIIN,W
			CULG				0141	0142	3	0141	0142	2	IIIG
			LEAR				0141.0	0146.6	2				CONT
			PALE				0142.1	0148.0	1				CONT
			CULG				0145.5		1				IIIB
			CULG	0314	0638								IN,W
			CULG	0638	0745								IS,W
			LEAR				0719.3	0719.7	2				V
			CULG				0719.5		2				IIIB
			CULG				0736		2				IIIB
			WEIS				0902	1436	1				IN
	0738	1122	WEIS				0937.7	0840.7	2				IIIG
			WEIS				0954.1	0954.4	3				IIIB
			WEIS				1001.7	1001.9	1				IIIG
			WEIS				1011.3	1011.5	1				IIIG
			WEIS				1021.4	1021.7	1				IIIG
	0735	1600	DWIN	1022.5	1023.0	1							IIIG
			WEIS				1024.6	1025.1	1				IIIG
			WEIS				1108.3	1108.5	2				IIIG
			WEIS				1110.4	1112.4	3				IIIG/V
			DWIN	1145.8		2							IIIB
	1133	1532	WEIS				1312.5	1312.7	1				IIIB
			WEIS				1317.6	1317.8	2				IIIG
			WEIS				1403.9	1405.6	2				IIIGU
			WEIS				1409.4	1410.0	3				IIIG
			PALE				1715.0	0403.0	1				B
	1337	2340	HARV				1732	1740	2	1732	1740	2	IIIGG
			HARV				1745	2326	1				IN
			PALE				1942.8	1943.1	2				III
			HARV	2002	2003	2							IIIG
			HARV				2028	2036	2				IIIG
			CULG				2045	2158					IS,W
	2045	2400	CULG	2045	2151	1							IS
			CULG				2047	2355	1				N,RS,DP
			CULG				2051	2400					IIIN,W
			CULG				2147	2149.5	1	2148	2148.5	1	IIIG
			HARV				2148	2150	2				IIIG
			CULG	2151	2400								IS,W
			CULG				2158	2400					IN,W
			LEAR				2300.0	1054.0	1				B
27	0000	0745	CULG	0000	0350								IS,W
			CULG				0000	0110					IN,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JANUARY 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
27			CULG							0007			IIIB,W
			CULG				0027	0745					IIIN,W
			CULG				0110	0320					IS,W
			CULG							0214	0414		IIIN,W
			CULG				0320	0745	1				IS,DC
			CULG				0336		1				IIIB
			CULG							0344	0420	1	SWF
			CULG	0350	0745	1							IS
			CULG				0436.5		1				IIIB
			CULG				0508		1	0508		1	IIIB
			CULG				0538.5	0539.5	1	0539	0539.5	1	IIIG
			CULG				0553		2				IIIG
			CULG	0732.5	0733	1							IIIG
	0734	1535	WEIS				0738	1433	2				IS
			WEIS				0748	1522	2				IIIN
	0730	1350	DWIN	1150	1158.5	2						IV	
			WEIS				1151.9	1208.8	3			II	HARM
			WEIS				1155.8	1158.3	2				IIIGG
			WEIS				1203	1415	2			IV	
	1648	2210	HARV				1711	2210	2				IN
			PALE				1715.0	0405.0	1				B
			HARV				1736	1737	2				IIIG
	2045	2400	CULG	2103	2312								IN,W
			CULG				2139	2308					IIIN,W
			CULG				2140	2205					IS,W
			CULG	2312	2400								IS,W
			CULG							2336	2350	1	SWF
28	0000	0745	CULG	0000	0225								IS,W
			CULG	0253.5	0254	2							IIIG
			CULG							0300	0320	1	SWF
			CULG	0346		1	0346		1				IIIB
			CULG	0700	0745								IS,W
	0745	1538	WEIS				0915.7	0916.3	1				IIIG
			LEAR				0915.8	0916.4	1				V
			WEIS				0930.6	0931.6	2				IIIG
			WEIS				0938.4	0938.7	1				IIIG
	0830	1600	DWIN	0956.0	0956.3	1							IIIG
			WEIS				1038.0	1038.6	2				IIIG
			DWIN	1049.4	1049.6	1							IIIG
	1610	2345	HARV				1655		1				IIIG
			HARV				1702	1703	2				IIIG
			HARV				2014	2015	1				IIIG
			PALE				2014.5	2014.7	1				III
	2045	2400	CULG				2129	2255					IIIN,W
29	0000	0745	CULG							0003			IIIB,W
			LEAR				0130.3	0131.0	1				CONT
			CULG				0131		1				IIIB
			CULG				0230.5	0238		0232	0236		IIIS,W
			LEAR				0230.6	0237.9	1				CONT
			CULG				0232.5	0233	1				IIIG
			CULG				0233	0233.5	1				RSCDP
			LEAR				0242.1	0242.9	1				CONT
			CULG				0449.5						IIIB,W
			LEAR				0449.5	0449.7	1				CONT
			LEAR				0455.7	0456.0	1				CONT
			CULG				0456		1	0456		1	IIIB
			LEAR				0606.2	0607.1	1				CONT
			CULG				0607						IIIB,W
	0730	0738	WEIS				0731.8	0731.9	2				IIIB
			CULG				0733.5	0734	3	0733.5	0734	1	IIIB,V
			LEAR				0733.9	0734.3	2				CONT
			LEAR				0814.1	0816.1	1				CONT
	0730	1605	DWIN	1105.8	1107.0	1							IIIG
	0749	1538	WEIS				1312.3	1312.4	1				IIIB
	1414	2345	HARV				1736	1738	2				IIIGG
			HARV				1751		1				IIIB
	2046	2400	CULG				2117		1				IIIB
			CULG	2208		1							IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

JANUARY 1980

DAY	TIMES OF OBSERVATION		STATION	EVENTS									SPECTRAL TYPE
				DECIMETRIC BAND			METRIC BAND			DEKAMETRIC BAND			
	START UT	END UT		START UT	END UT	INT	START UT	END UT	INT	START UT	END UT	INT	
29			CULG				2223.5			2223.5			IIIB,W
30			LEAR				0543.2	0544.0	1				CONT
			LEAR				0632.5	0632.9	1				V
	0000	0735	CULG				0632.5		1				IIIB
			CULG				0636	0637	2				IIIG
			LEAR				0727.0	0728.8	1				CONT
	0730	1600	DWIN										
	0730	1540	WEIS				1441.7	1441.9	1				IIIB
	1400	2345	HARV				1542		2				IIIG
			HARV				1744		1				I
	2045	2400	CULG	2117.5	2118								IIIG,W
			CULG				2136		1				IIIB
			CULG				2143.5		1				IIIB
			CULG				2203.5		1	2203.5		1	IIIB
			CULG				2204.5	2328					IIIN,W
			CULG				2255	2255.5	2	2255	2255.5	2	IIIB,V
			HARV				2255		2				IIIG
			LEAR				2255.0	2255.5	1				CONT
			CULG				2321		1	2321		1	IIIB
			LEAR				2322.5	0002.8	1				S
			CULG				2344.5		1	2344.5	2345	1	IIIG
			CULG				2354.5	2355.5	1	2354.5	2355.5	1	IIIG
31	0000	0745	CULG				0002	0723		0002	0407		IIIN,W
			LEAR				0040.0	0042.8	1				CONT
			CULG				0042.5		1	0042.5		1	IIIB
			CULG							0107	0108	2	IIIG
			LEAR				0108.2	0108.6	1				CONT
			LEAR				0143.2	0146.9	1				CONT
			CULG				0146.5		1	0146.5		1	IIIB
			LEAR				0224.0	0224.4	1				CONT
			CULG	0316.5	0317	1	0316.5	0317	2	0316.5	0317.5	2	IIIG,V
			LEAR				0316.7	0317.2	2				CONT
			LEAR				0345.1	0411.3	1				S
			CULG				0411		1				IIIB
			LEAR				0555.6	0600.0	1				CONT
			CULG	0622		1							IIIB
			LEAR				0722.2	0723.0	1				CONT
			LEAR				0816.7	0817.4	1				CONT
	0730	1124	WEIS				0816.7	0817.2	2				IIIG
			WEIS				0910.3	0910.4	1				IIIB
			LEAR				0933.6	0936.4	2			II	
	0730	1600	DWIN	0950.5	0951.0	1							IIIG
			DWIN	1011.6	1011.8	2							IIIG
			WEIS				1015.2	1015.4	1				IIIB
			DWIN	1017.1		3							IIIB
			DWIN	1053.4	1053.5	2							IIIG
			DWIN	1110.8	1111.4	2							IIIG
	1030	1510	BLEN	1111.1	1111.4	1							DCIM,RS
	1130	1543	WEIS										
			BLEN	1149.7	1150.9	1							DCIM
			BLEN	1507.6	1057.8	1							DCIM,RS
			DWIN	1507.8	1508.0	1							IIIG
	1400	2350	HARV	1508		2							IIIG
			HARV				1933		1				IIIG
	2045	2400	CULG				2053	2253					IIIN,W
			HARV				2125	2126	1				IIIBW
			CULG				2132		1				IIIB
			CULG				2139.5	2140	1	2139.5		1	IIIG
			HARV				2253	2256	1				IIIG
			CULG				2253.5	2254	1				IIIG
			LEAR				2253.8	2253.9	1				III

The symbols used in connection with the spectral type in describing the important bursts are as follows:

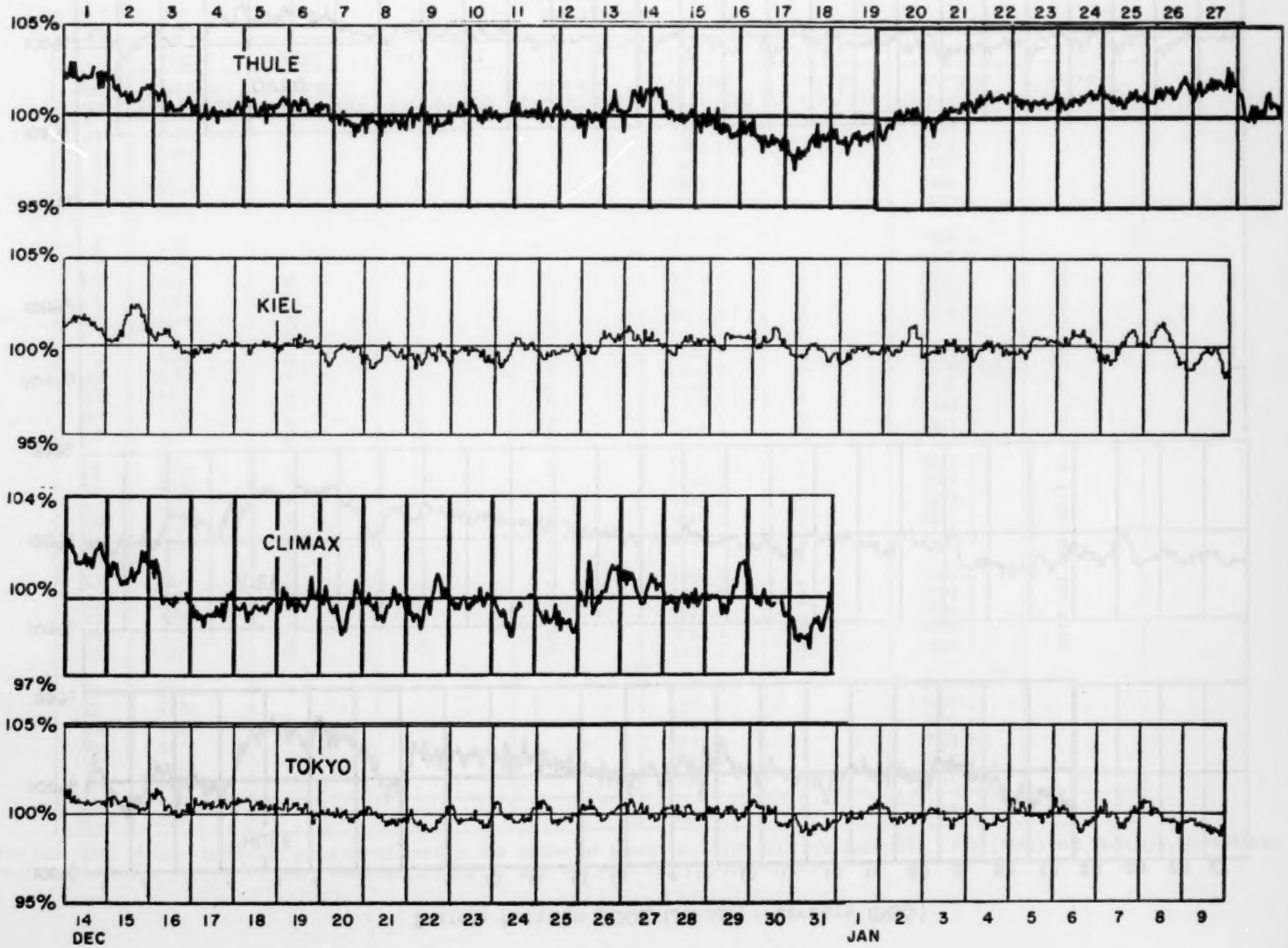
B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity
DCIM = Fast drift

Bartels Rotation 2001 (December 1979 - January 1980)

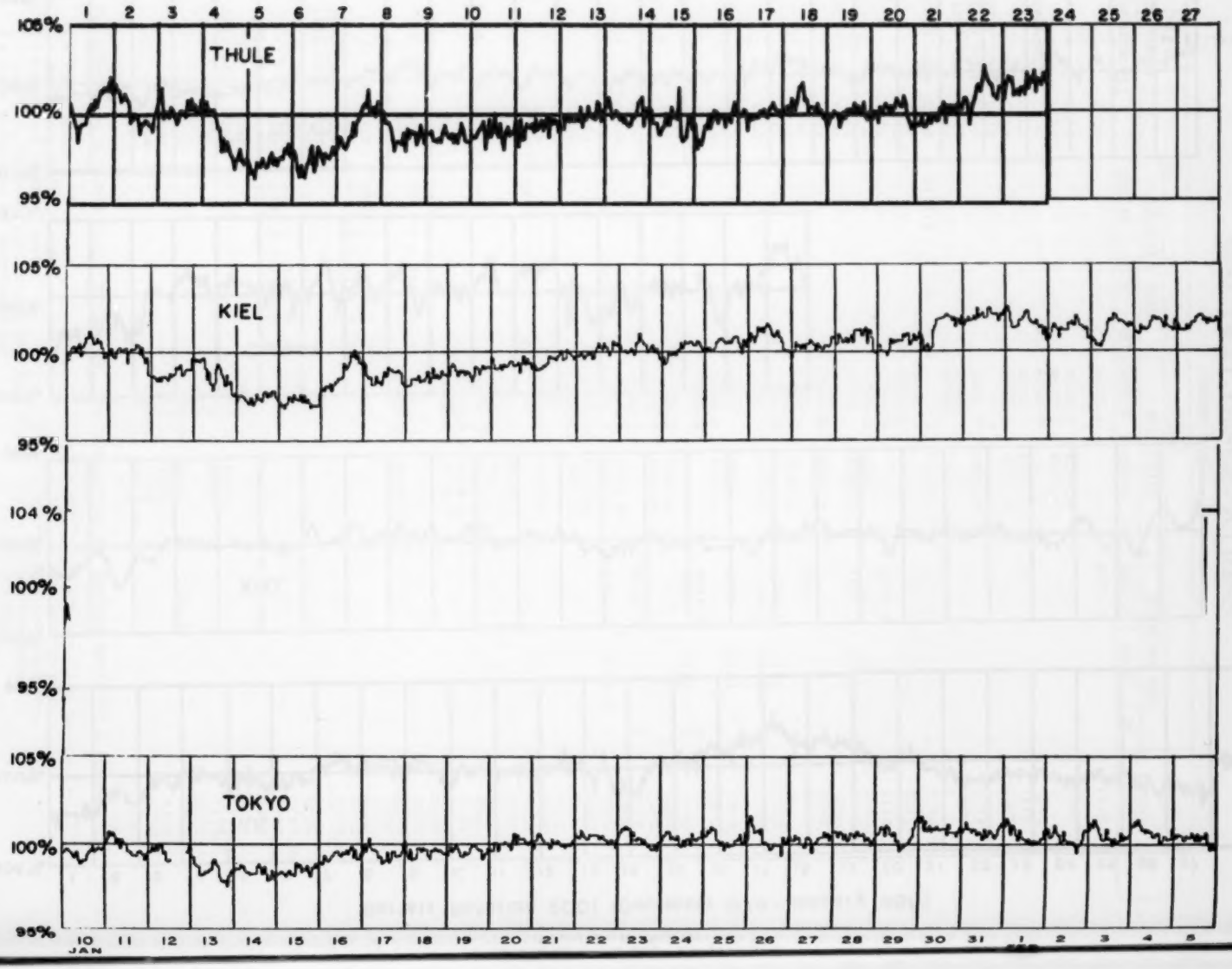
(Neutron Monitors)

Bartels Rotation 2001 (December 1979 - January 1980)

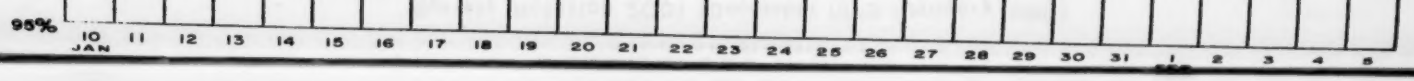


COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 2002 (January - February 1980)



COSMIC RAY INDICES
(Neutron Monitors)



COSMIC RAY INDICES

(Neutron Monitors)

JANUARY 1980

Jan 1980	THULE Average (cts/h)100	ALERT Average (cts/h)/100	DEEP RIVER Average (cts/h)/300	CALGARY Average (cts/h)/100	KIEL Average (cts/h)/100	CLIMAX Average (cts/h)/100	TOKYO Average (cts/h)/256	HUANCAYO Average (cts/h)/100
1	4273				5925.5		3596.4	
2	4284				5956.1		3592.6	
3	4320				5944.2		3592.2	
4	4314				5940.2		3586.0	
5	4321				5955.9		3600.6	
6	4321				5968.4		3589.6	
7	4337				5949.8		3594.1	
8	4351				5964.3		3593.6	
9	4298				5907.0		3570.6	
10	4295				5927.8		3566.8	
11	4283				5902.5		3580.1	
12	4287				5836.0		3570.1(15)	
13	4216				5832.2		3531.6	
14	4165				5757.0		3530.8	
15	4169				5744.3		3531.6	
16	4258				5837.5		3561.9	
17	4229				5830.1		3567.3	
18	4224				5820.6		3569.6	
19	4234				5844.2		3571.7	
20	4247				5864.2		3587.0	
21	4272				5880.8		3589.0	
22	4278				5911.2		3598.4	
23	4256				5917.0		3596.5	
24	4259				5917.3		3598.3	
25	4277				5934.7		3597.1	
26	4297				5956.8		3597.5	
27	4278				5927.8		3595.2	
28	4284				5951.5		3602.8	
29	4273				5939.4		3603.8	
30	4326				5988.5		3618.4	
31	4348				6025.1		3612.0	
MEAN	4277				5905.2		3583.8	

Data not available at time of publication.

For less than 24-hour coverage, parentheses enclose the number of hours for which data are available. For Climax and Huancayo, parentheses enclose the number of section hours whenever the sum of both sections falls below 40 hours.

GEOMAGNETIC ACTIVITY INDICES

JANUARY 1980

Day		Three-Hourly Indices Kp									Three-Hourly Indices Km								Ap	aa *					Cp
		1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8		N	S	M			
1	D4	2+	2+	2+	3+	3+	4+	5	5	28	2-	2-	2+	3	3+	4	5-	5-	24	46	37	22	62		1.2
2		4+	3	2	2+	3+	2	1	2	20	4-	2+	2-	2+	3	2+	1+	2+	12	18	25	26	17		0.7
3		3-	4+	2-	3+	4-	3-	3+	4-	25+	3-	4-	2-	3	3	3-	4-	4-	18	28	42	34	36		1.0
4		3	3+	3	3	2+	4	3+	3	25	3-	3-	3-	3-	2+	4-	3+	2+	16	29	32	29	32		0.9
5		3-	2	2	3-	3	3-	3	3	21	2	2-	2-	3-	3	3-	3-	3-	12	19	23	19	24		0.7
6		3-	3+	2	1+	2	2	1+	1+	16	2+	3-	2-	1+	2-	2	1+	1	8	13	16	19	11		0.4
7	Q7	0+	0	1-	1	1	1+	2+	3-	9+	0	0+	1-	1-	1	1+	2	3-	5	8	9	5	13	KK	0.2
8		3-	2+	2	2+	1-	0+	1	1-	12	3	2	2-	3	1	1-	1	1	6	11	13	19	5	KK	0.3
9	Q1	1+	1-	1-	1-	1-	1	0+	0+	5+	2-	1+	0+	1	1	1-	0+	0	3	5	7	8	4	CC	0.1
10	Q2	0+	0+	0	1-	1+	1	1-	1+	6-	0+	1-	0+	1-	2-	1	1-	1+	3	4	5	4	6	CK	0.1
11		1-	2-	3	3-	3-	3-	3	3-	19	0	1+	3	3-	3-	3-	3	3-	11	17	23	17	24		0.6
12	Q5	1-	1	1+	2-	1+	1	1	1	9	1	1+	2-	1+	1+	1+	2-	1+	4	5	11	10	7	C	0.2
13	D5	0	3-	3+	4+	4+	4	5-	4-	27	1-	3	4-	4-	4-	4	4+	3+	23	34	57	40	51		1.1
14		4-	3	2	2	2-	2	1+	2-	17+	3	2-	2-	2-	2-	2+	2-	2-	9	15	15	17	14		0.5
15		1-	0+	1	2-	2	2+	2+	1+	12-	1	1-	1+	2-	2	2+	3-	1+	6	13	13	10	16	C	0.3
16		4+	3	2+	1	1+	0+	0+	0+	13	3+	2+	2-	1+	1+	1-	0+	1	9	13	12	20	5	K	0.5
17		1	2	4+	3	3+	3	2	1+	20	1+	2+	4-	3-	3+	3	2+	2-	13	25	33	36	22		0.7
18	Q3	1+	1-	1	1-	1+	0+	1+	2-	8+	1+	1	1	1	1	1-	1	2-	4	6	6	5	7	CK	0.1
19	Q4	2-	0	0+	1	1-	2-	2-	1	8	1	0+	0	2-	1	2	2-	1	4	8	8	6	11	CC	0.1
20		3-	2+	1-	1-	1	1-	2	2+	12+	2	2-	1	1	1+	1-	2	2+	6	15	9	13	12	CC	0.3
21	Q0	3-	1	1	1	2	1	1-	2-	11	2+	1-	1+	1-	2+	1+	1	2-	6	11	12	12	12	KK	0.2
22		0+	0	1	1+	1	2-	3	2-	10	1-	0+	1+	2-	2-	2-	3-	2	5	10	13	8	15	CC	0.2
23	Q6	2-	1	2	2-	1+	1-	1	0+	10-	1	1+	2	2+	1+	1+	1+	1-	5	7	10	11	6	CC	0.2
24	Q9	0+	0	1-	2-	2-	2+	2+	1	10	1-	1-	1-	2-	2-	2+	2+	1+	5	11	9	7	14	CC	0.2
25		0+	0	1-	2+	2+	2	3-	3-	13	0+	0+	1	3-	2+	2	3-	2+	7	15	18	10	23		0.3
26		1+	2+	1	1	2-	1-	2	2+	12+	1+	3-	1+	2-	2+	1	2+	2+	6	11	12	10	14	C	0.3
27	D3	2+	3	3-	2+	4+	4+	5-	5	29-	2+	3-	3-	3-	4+	4+	5	5-	24	57	50	21	87		1.2
28	D1	3	4-	2+	2+	4-	5	5+	4+	30-	2+	3-	2+	2	4-	5	5	4-	27	45	50	23	73		1.2
29	D2	5+	4+	2-	3-	4-	4+	4-	4-	29+	4+	4-	2	2+	4-	4+	4-	4-	26	49	39	37	51		1.2
30		3+	2+	2	3+	2	2	1+	2-	18	3-	2+	2+	3+	2-	2	1+	1+	10	16	24	26	14		0.5
31	Q8	2-	0+	1-	2-	1+	1	2-	2+	11-	1+	0+	1-	2-	1	1	2-	3-	5	12	9	10	12	C	0.2
																		Mean	10	18.6	20.7	19.9			0.51

Day	Three-Hourly Indices Kn								Three-Hourly Indices Ks							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	2-	2-	2+	3	3	4+	5-	5-	2-	2-	2	3	4-	4	5-	5-
2	3+	2+	2-	2+	3	2+	1	2	4-	3-	2	2+	3+	2+	1+	2+
3	2	4-	1+	3-	3	3-	3+	4-	3	4-	2	3+	3	3-	4	4
4	3-	2+	2+	3-	2+	4	3	2+	3	3	3	3-	3-	3+	3+	2+
5	2+	1+	1+	2+	3	3-	3-	3-	2	2	2	3	3+	2+	3-	3-
6	2+	3-	1+	1	2+	2	1+	1-	2+	3-	2	1+	1+	2	2-	1+
7	0	0	1-	1-	1+	1+	2+	2+	0	1-	1	1-	1	1	2	3
8	3-	2-	1+	2+	1-	1-	1-	1-	3	2+	2	3+	1+	1	1+	1
9	1+	1-	0+	1	1-	1-	0+	0	2+	1+	1-	1	1+	0+	0+	0+
10	0+	1-	0	0+	2-	1	1-	1+	0+	1	0+	1	2-	1+	1	1+
11	0+	1+	3-	3-	3-	3-	3	3	0	1+	3+	3-	2+	3	3	3-
12	0+	1-	1+	1+	1+	1-	1+	1-	1+	2-	2	2-	2-	2-	2+	1+
13	0+	2+	3+	3+	4-	4-	4+	3+	1-	4-	4	4-	4	4	4+	4-
14	3-	2-	1+	2-	1+	2+	1+	1+	3	2	2	2	2-	2+	2	2
15	1-	0+	1	2-	2	2+	3-	1+	1+	1	2-	2	2+	2	2+	1+
16	3+	2-	2-	1+	1+	0+	0+	0	3+	3-	2	1+	1+	1	1-	2-
17	1-	2-	4-	3	3+	3+	2+	1+	2	3-	4	3-	4-	3	2+	2
18	1+	1	1+	1	1	1-	1-	1+	1+	1+	1-	1	1	1-	1	2
19	1-	0	0	1+	1-	2-	2-	1	1	1-	0+	2	1+	2	2-	1
20	2	1+	1-	1-	1+	1-	2	2	2-	2-	1+	1+	1	1-	2	3-
21	2	0+	1+	1-	3-	1	1	1+	2+	1-	1+	1-	2+	2-	1	2
22	1-	0	1+	2-	1+	2-	3-	1+	1	1-	1+	2	2-	2-	3-	2+
23	1	1	2	2	1+	1+	1	0+	1	2-	2-	2+	1+	1	1+	1+
24	1-	0+	0+	2-	1+	2+	3-	1	1	1	1	2-	2-	2+	2+	1+
25	0	0	0+	3-	2+	2	3-	2+	1-	1-	1+	3	3-	2+	3-	3-
26	1	2+	1-	1+	3-	1	2	2+	1+	3	2-	2	2	1	2+	2+
27	2	2	3-	2+	4	4+	5	5-	3-	3-	3-	3	4+	4+	5	5-
28	2+	3-	2	2	4-	5-	4+	4-	3-	3-	3-	2	4	5	5+	4
29	4+	4-	2	2	4-	5-	4-	3+	5-	4-	2+	2+	4-	4	4-	4-
30	3-	2-	2	3	2-	2	1+	2-	3	3-	2+	4-	2-	2+	1	1+
31	1+	0	0+	1+	1	1	2-	2	1+	0+	1-	2-	1	1-	2	3-

Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2 nT) are prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days [Q1-Q0[10]] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap≤ 6 but one Kp≥ 3o or two Kp values ≥ 3-"). An asterisk means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices Kn, Ks and Km as in *IAGA-Bulletin No. 32* and indices aa ("antipodal") as in *IAGA-Bulletin No. 33* are prepared by M. Menvielle of the Institut de Physique du Globe, Paris, France. Really quiet (C) and quiet but slightly disturbed three-hourly intervals (K) are given for 24-hour and 48-hour intervals centered on 1200 UT.

DAILY AVERAGE INDICES Ap

DAILY AVERAGE INDICES Ap

DAY	1979 FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	1980 JAN
1	6	12	33	18	5	7	16	10	10	16	9	24
2	10	20	36	14	6	4	11	5	7	12	11	12
3	9	13	54	6	4	14	10	9	13	10	9	18
4	19	27	47	7	6	9	16	10	9	10	16	16
5	9	13	52	7	4	9	8	17	6	2	7	12
6	16	30	12	6	34	22	18	15	36	3	6	8
7	6	7	12	11	26	27	10	6	32	12	4	5
8	9	7	12	8	14	9	7	6	37	14	10	6
9	9	15	9	14	15	6	6	5	23	19	7	3
10	6	54	12	7	14	6	7	9	17	6	5	3
11	12	18	6	19	10	4	10	14	10	10	5	11
12	17	6	15	9	7	11	18	8	8	7	4	4
13	3	7	11	8	8	16	76	8	12	35	4	23
14	2	3	15	11	7	14	7	10	6	13	4	9
15	11	8	18	11	10	15	4	8	8	3	9	6
16	7	11	16	5	16	11	5	14	8	12	10	9
17	5	21	11	3	14	14	8	11	4	8	13	13
18	22	7	6	11	6	15	11	64	3	4	7	4
19	15	11	6	24	6	11	35	6	5	7	6	4
20	6	6	2	13	8	18	42	22	6	10	4	6
21	59	4	21	13	15	9	22	23	10	6	4	6
22	33	45	45	36	24	6	12	6	14	2	15	5
23	31	12	23	11	19	6	5	7	6	4	3	5
24	17	15	14	27	10	5	13	15	12	24	7	5
25	14	21	126	34	9	3	22	19	14	15	2	7
26	22	26	12	25	20	17	15	19	8	4	10	6
27	24	18	27	17	10	23	12	15	6	4	12	24
28	17	39	31	11	4	10	10	16	9	2	16	27
29		68	47	30	7	24	77	15	11	4	32	26
30		16	26	10	10	9	15	18	5	15	20	10
31		19		6		3	12		5		9	5
MEAN	15	19	25	14	12	12	18	14	12	10	9	10

GEOMAGNETIC ACTIVITY INDICES

OBS. 3 letter IAGA code	GE N L T
COL	6
WIT	5
IRK	4
JAI	1
SHL	1
UJJ	1
ABG	0
HYB	0
ANN	0
HUA	0
TRD	0
HER	3
KGL	5
HYB	0
HYB	0
HUA	0
KGL	5
COL	6
FRD	4
HON	2
JAI	1
SHL	1
UJJ	1
ABG	0
HYB	0
GUA	0
ANN	0
HUA	0
TRD	0
PMG	1
KGL	5
HON	2
HYB	0
KGL	5
HYB	0
KGL	5
HYB	0
GNA	4
ABG	0
COL	6
NEW	5
WIT	5
FRD	4
IRK	4
JAI	1
SHL	1
UJJ	1
ANN	0
HUA	0
TRD	0
HER	3
KGI	5
WIT	5
IRK	4
SJG	2
HON	2
HYB	0
GUA	0
HUA	0
PMG	1
HER	3
KGL	5
HUA	0

Reports wer

ALIBAG	A
JAIPUR	K

PRINCIPAL MAGNETIC STORMS

-JANUARY 1980

OBS. 3 letter IAGA code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
COL	64.6N	01	07--	..	..	..	..	01(4)	6	152	920	570	02	05
WIT	54.2N	01	11--	..	..	..	..	01(7)	6	32	115	55	02	03
IRK	41.0N	01	1000	..	..	..	..	01(6,7,8)	5	20	75	51	02	19
JAI	17.3N	01	1100	..	..	..	..		-	6	93	22	03	02
SHL	14.6N	01	1100	..	..	..	..		-	4	95	16	03	02
UJJ	13.5N	01	1100	..	..	..	..		-	5	101	18	03	02
ABG	09.5N	01	1100	..	..	..	..	01(7)	5	5	107	28	03	02
HYB	07.6N	01	0300	..	..	..	..	01(6,7,8)	5	5	151	23	02	18
ANN	01.5N	01	1100	..	..	..	..		-	5	116	38	03	02
HUA	00.6S	01	1110	..	..	..	..	01(5,6,7,8)	5	12	316	46	02	03
TRD	01.1S	01	1100	..	..	..	..		-	4	133	86	03	02
HER	33.7S	01	1100	..	..	..	..	01(7,8)	5	34	76	76	02	03
KGL	56.5S	01	11--	..	..	..	..	01(7,8) 02(1)	6	--	--	--	02	04
HYB	07.6N	02	2300	..	..	..	..	03(7) 04(6)	4	4	72	22	04	20
HYB	07.6N	11	0757	SC	- .1	+11	- 1	11(3,5,6,7)	3	3	71	31	12	22
HUA	00.6S	11	0757	SC	1	6	1	11(5,6,7)	5	11	264	73	11	22
KGL	56.5S	11	0757	SC*	-22	-30	5	11(3)	3	--	--	--	11	22
COL	64.6N	13	0510	SC*	- 5	+68	-13	13(4)	6	141	970	550	13	23
FRD	49.6N	13	0511	SC	+ 1	+16	- 3	13(5)	5	15	115	44	14	
HON	21.1N	13	0509	SC		5	2	13(6)	4	4	31	8	14	03
JAI	17.3N	13	0509	SC	- .6	18	- 5		-	5	130	36	14	01
SHL	14.6N	13	0509	SC		22	3		-	3	128	40	14	01
UJJ	13.5N	13	0509	SC	- .6	28	- 8		-	4	148	34	14	01
ABG	09.5N	13	0509	SC	- .9	23	-10	02(1,5)	4	4	158	37	14	01
HYB	07.6N	13	0511	SC	- .3	+27	- 3	13(7)	6	4	173	32	14	17
GUA	04.0N	13	0510	SC*	..	21	- 6	13(5)	4	--	120	40	13	21
ANN	01.5N	13	0509	SC	1.6	45	15		-	2	238	91	14	01
HUA	00.6S	13	0509	SC	1	22	3	13(5,6,7)	5	12	259	62	14	04
TRD	01.1S	13	0509	SC	- .2	51	61		-	2	295	139	14	01
PMG	18.6S	13	0510	SC	.6	23	23	13(3)	5	6	130	60	14	00
KGL	56.5S	13	0509	SC*	-37	-11	8	13(5,6,7,8)	5	--	--	--	14	18
HON	21.1N	16	0512	SC		2		17(3)	3	1	28		18	01
HYB	07.6N	16	2200	..	..	..	..	17(2,3,5)	3	4	75	29	18	00
KGL	56.5S	17	0511	SC*	-18	-14	- 7	17(3,5)	3	--	--	--	18	04
HYB	07.6N	25	1108	SC	- .1	+13	- 1	25(4,5,7,8) 26(2)	3	4	58	25	26	12
KGL	56.5S	25	1108	SC*	31	35	9	25(4,7)	3	--	--	--	26	00
HYB	07.6N	26	2000	..	..	..	..	27(6,7,8)	5	6	137	38	28	00
GNA	43.2S	26	1542	SC	3.4	32	25	28(6,8) 29(1,2,6,8)	5	20	70	100	30	12
ABG	09.5N	27	1200	..	..	..	..	13(4,7) 27(5,6,7,8)	5	6	97	44	29	23
COL	64.6N	27	08--	..	..	..	..	27(5,6) 28(5,6) 29(5)	6	240	1230	750	29	22
NEW	55.1N	27	08--	..	..	..	..	27(5)	5	31	115	135	30	14
WIT	54.2N	27	14--	..	..	..	..	27(7)	6	37	125	60	28	00
FRD	49.6N	27		..	..	..	..	28(6)	5	21	133	73	30	
IRK	41.0N	27	0700	..	..	..	..	27(6,8)	6	19	100	55	28	02
JAI	17.3N	27	1200	..	..	..	..		-	7	91	39	29	23
SHL	14.6N	27	1200	..	..	..	..		-	4	101	24	29	23
UJJ	13.5N	27	1200	..	..	..	..		-	6	104	43	29	23
ANN	01.5N	27	1200	..	..	..	..	28(6) 29(5,6)	-	4	142	62	29	23
HUA	00.6S	27	1146	..	..	..	..	27(6)	6	12	226	44	28	07
TRD	01.1S	27	1200	..	..	..	..		-	3	170	87	29	23
HER	33.7S	27	1200	..	..	..	..	27(7)	5	30	75	106	27	24
KGL	56.5S	27	11--	..	..	..	..	27(7)	7	--	--	--	27	00
WIT	54.2N	28	1543	SC*	- 4 *	19 *		28(7)	6	46	175	80	29	23
IRK	41.0N	28	1100	..	..	..	..	28(5,6) 29(6,7)	5	15	90	29	30	12
SJG	29.9N	28	1542	SC	1	9	2	29(1)	5	10	144	57	29	08
HON	21.1N	28	1542	SC	1	6	2	28(7,8,1) 29(7,8,1)	4	7	117	33	29	06
HYB	07.6N	28	1543	SC	- .2	+26	- 2	28(6) 29(5,6)	5	4	132	42	30	13
GUA	04.0N	28	1543	SC	..	20	- 6	29(1)	6	--	120	30	30	13
HUA	00.6S	28	1543	SC*	5	220	12	28(6,7)	7	13	495	34	29	06
PMG	18.6S	28	1543	SC	.4	32	27	28(6)	5	5	90	50	29	12
HER	33.7S	28	1200	SC*	9	21	14	28(6,7)	5	22	92	998	29	06
KGL	56.5S	28	1543	SC	..	..	..	28(7)	6	--	--	--	29	06
HUA	00.6S	29	1205	..	..	..	..	29(5,6)	6	11	212	33	30	01

Reports were received from the following observatories:

ALIBAG ANNAMALAINAGAR COLLEGE FREDERICKSBURG GNANGARA GUAM HERMANUS HONOLULU HUANCAYO HYDERABAD IRKUTSK
JAIPUR KERGUELEN NEWPORT PORT MORESBY SAN JUAN SHILLONG SITKA TRIVANDRUM UJJAIN WITTEVEEN

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

JANUARY 1980

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin nr. 32h, page 106 - 116.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

11 0758: A: SOD VIC QUE; B: WNG HAD HUA; C: AQU ALM KGL (si: B: EBR; C: MPO)

13 0510: A: DOU VIC COI QUE HUA MPO; B: SOD DOB ESK WNG AQU EBR ALM KGL;
C: WIT NGK HAD MMB TOL KAK HAZ KNY CZT DUM

17 0512: A: DOU COI QUE; B: AQU; C: WNG WIT EBR ALM KGL DUM

25 1109: A: DOU COI QUE HUA MPO KGL; B: SOD ESK WNG WIT VIC AQU ALM CZT;
C: NGK HAD EBR TOL DUM (si: A: DOB)

28 1943: A: ESK WNG DOU VIC COI QUE HUA MPO CZT KGL; B: WIT HAD AQU EBR TOL
ALM DUM; C: NGK HAZ KNY

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined

06	1650 - 1700	HUA
08	1003 - 1035	WNG
09	0028 - 0104	HAZ
10	0502 - 0623	MMB KAK HAZ
14	0620 - 0640	HAZ
15	1102 - 1121	SOD NGK
18	2329 - 2340	HAZ
27	1142 - 1215	WNG

Very unusual events

n o n e

DAY
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MEA

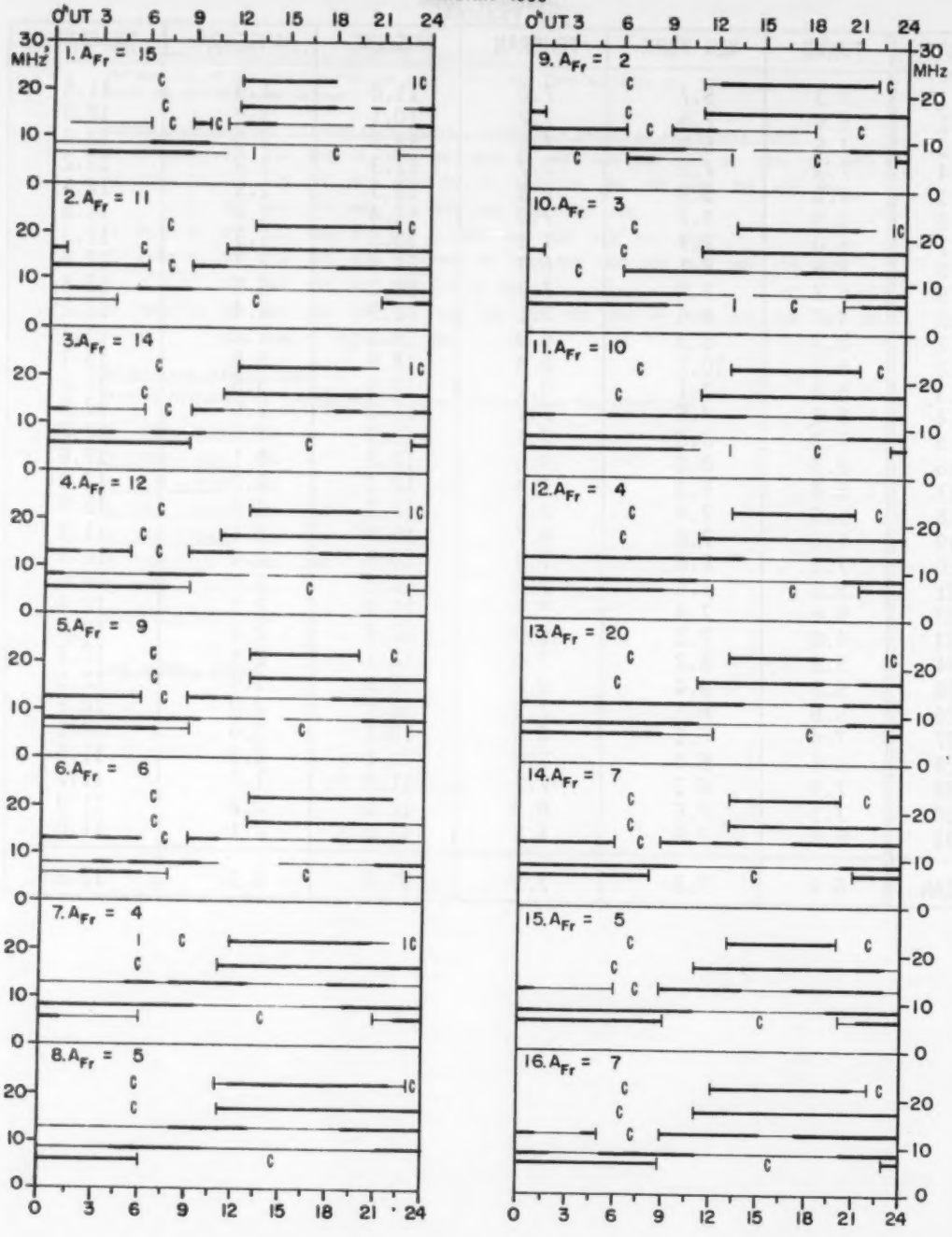
RADIO PROPAGATION QUALITY INDICES

JANUARY 1980

DAY	TOKYO	NEW YORK	TEHERAN	MOSCOW	CANBERRA	BRACKNELL
1	7.3	5.7	7.0	11.0	1.9	11.4
2	5.9	7.5	7.2	10.1	1.6	12.3
3	7.5	6.8	7.5	11.3	1.5	12.4
4	7.9	7.2	7.7	11.3	1.9	12.2
5	7.0	6.9	6.8	11.3	1.9	12.1
6	5.9	7.2	7.0	11.4	1.6	11.8
7	6.0	7.7	7.1	10.9	1.3	12.3
8	5.6	8.1	6.9	11.4	2.3	12.6
9	5.2	7.9	7.2	12.2	2.6	12.4
10	4.7	8.6	7.1	11.9	2.4	12.2
11	6.3	8.3	6.9	12.3	2.7	13.1
12	6.6	10.1	8.3	12.5	3.5	13.1
13	6.8	7.1	9.1	12.5	3.5	13.2
14	6.6	7.6	7.1	12.3	2.6	12.8
15	7.2	8.0	7.1	12.0	2.6	12.7
16	6.3	8.0	9.0	12.2	2.1	12.6
17	6.4	7.3	7.4	12.2	2.2	12.8
18	5.9	7.4	7.1	12.2	2.2	12.5
19	7.0	7.8	6.7	10.9	2.1	11.9
20	7.1	7.6	7.3	10.5	2.0	12.5
21	5.6	7.6	7.5	12.2	2.0	12.6
22	5.8	7.4	7.9	11.9	2.1	12.4
23	4.8	7.5	9.0	12.4	2.6	12.7
24	5.8	8.2	7.0	12.1	2.4	12.3
25	5.8	9.4	9.6	12.3	3.4	12.5
26	5.8	8.7	7.2	12.2	3.0	12.3
27	7.4	6.6	6.5	12.1	3.0	12.1
28	6.8	6.4	7.8	11.8	2.5	11.6
29	7.4	6.3	7.2	11.6	1.7	11.7
30	7.1	7.6	8.3	12.0	2.2	11.9
31	6.6	7.9	7.2	11.5	2.1	11.8
MEAN	6.4	7.6	7.5	11.8	2.3	12.3

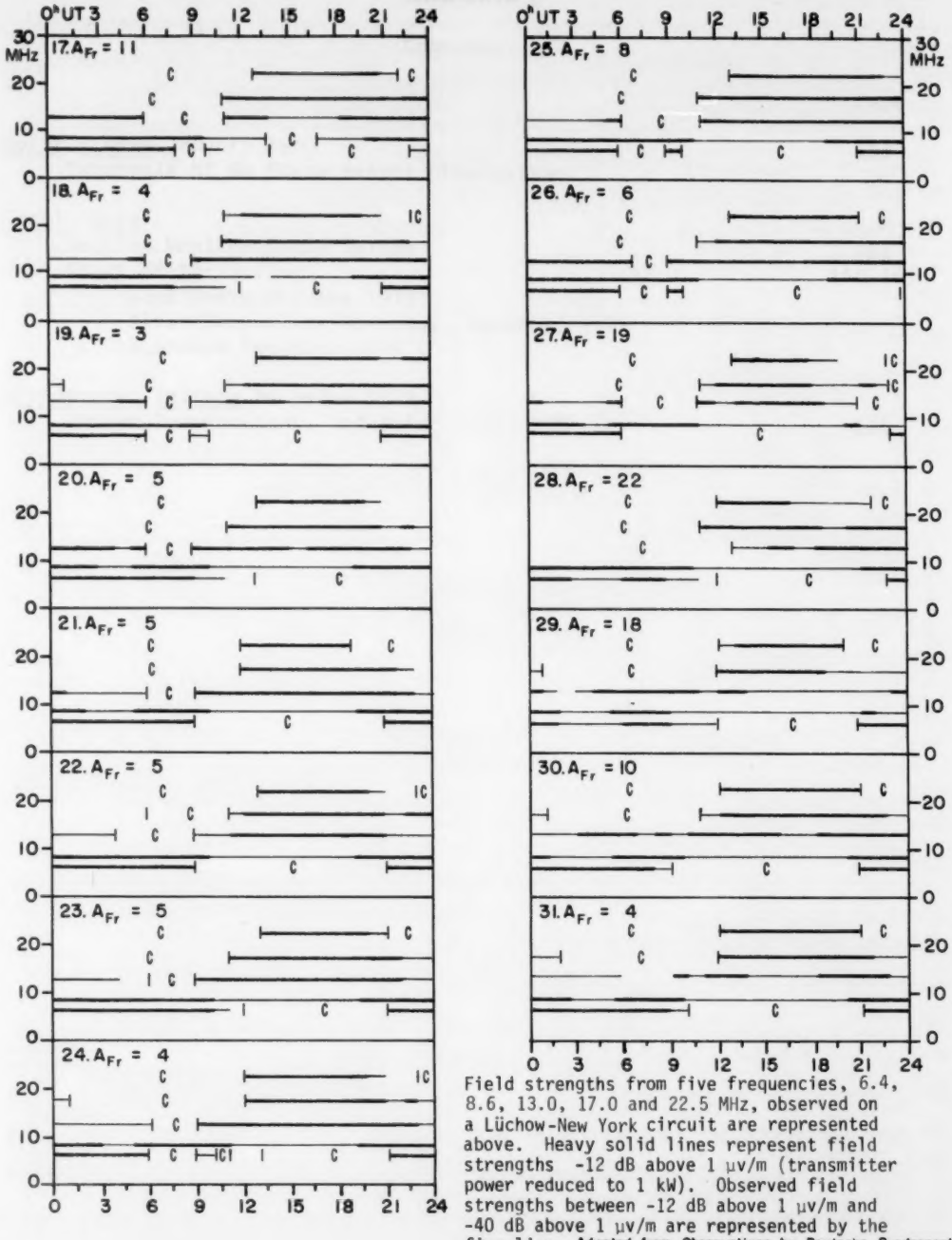
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

JANUARY 1980



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

JANUARY 1980



Field strengths from five frequencies, 6.4, 8.6, 13.0, 17.0 and 22.5 MHz, observed on a Lüchow-New York circuit are represented above. Heavy solid lines represent field strengths -12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line. Adapted from Observations by Deutsche Bundespost

SGD 427 Part I (Prompt)

LATE DATA

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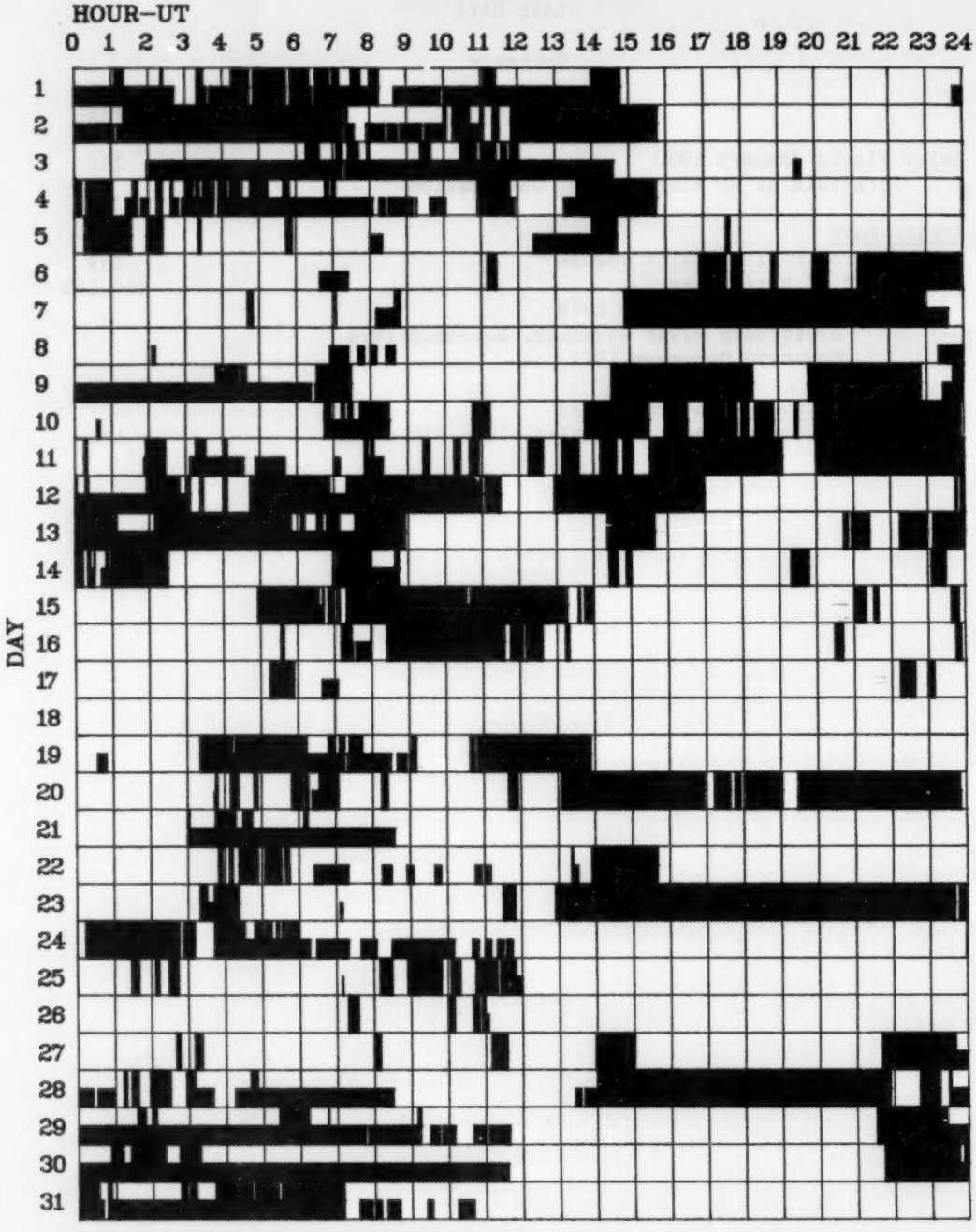
INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

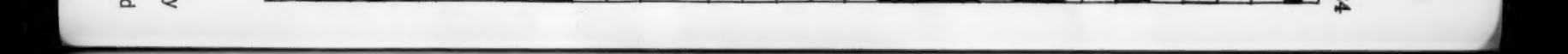
JANUARY 1980



Observatories included in total patrol:

Athens	Catania	Manila	Monte Mario	
Big Bear	Holloman	Mitaka	Palehua	Ramey

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

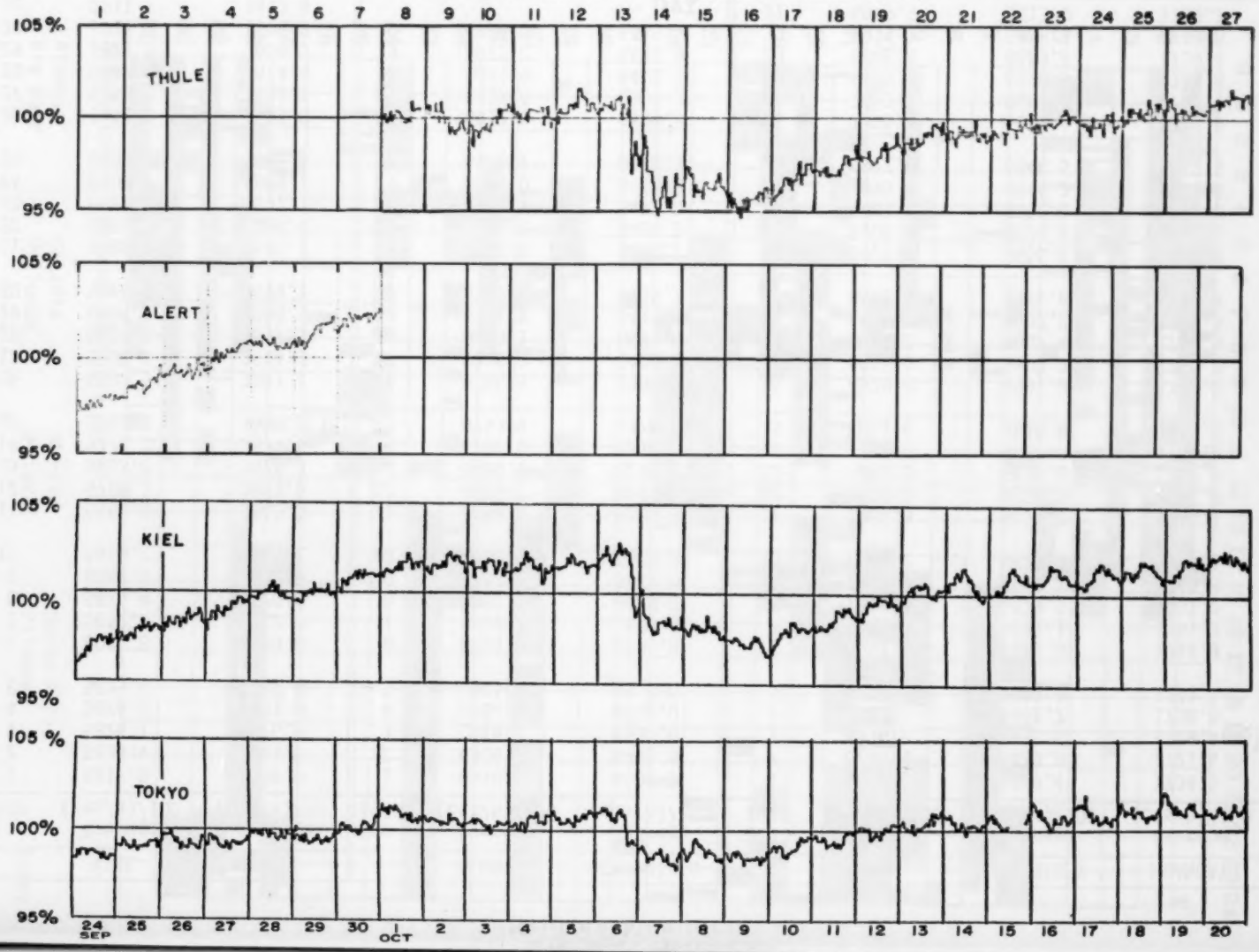


COSMIC RAY INDICES
(Neutron Monitors)

	KIEL	TOKYO		ALERT	DEEP RIVER		ALERT	DEEP RIVER	HUANCAYO
Oct 1979	Average (cts/h)/100	Average (cts/h)256	Nov 1979	Average (cts/h)/100	Average (cts/h)/300	Dec 1979	Average (cts/h)/100	Average (cts/h)/100	Average (cts/h)/100
1	5817.0	3594.9	1	6910.6	6503.5	1	6808.0	6467.4	1734.5
2	5835.4	3581.5	2	6906.0	6498.8	2	6749.1	6423.8	1721.6
3	5826.1	3576.4	3	6919.0	6537.8	3	6836.2	6466.5	1729.4(36)
4	5826.2	3581.0	4	6932.0	6556.0	4	6821.0	6451.7	1738.3
5	5835.6	3587.8	5	6921.3	6518.0	5	6909.8	6504.5	1741.5
6	5833.8	3580.8	6	6914.0	6536.8	6	6952.0	6551.5	1744.9
7	5652.7	3512.0	7	6918.4	6563.8	7	6996.3	6621.1	1751.3
8	5626.4	3520.6	8	6882.7	6529.2	8	7019.4	6619.5	1751.2
9	5582.5	3510.8	9	6787.4	6418.0	9	7029.2	6632.1	1749.8
10	5619.7	3531.1	10	6750.5	6359.8	10	7049.2	6627.0	1747.1
11	5662.8	3545.5	11	6648.4	6268.8	11	7065.8	6611.8	1748.7
12	5709.1	3563.6	12	6583.7	6243.5	12	7072.6	6625.5	1751.4
13	5753.8	3576.3	13	6690.1	6279.5	13	7098.3	6685.6	1752.0
14	5776.3	3574.6	14	6706.0	6330.5	14	7109.7	6716.0	1755.8
15	5783.3	3580.3(15)	15	6753.9	6370.4	15	7051.6	6649.8	1751.0
16	5800.5	3587.1	16	6766.9	6396.8	16	6979.8	6597.3	1748.5
17	5804.8	3594.3	17	6816.3	6405.2	17	6966.5	6608.7	1750.2
18	5824.0	3597.3	18	6805.1	6421.6	18	6988.2	6602.4	1755.0
19	5834.4	3608.1	19	6781.9	6417.3	19	6995.7	6607.2	1751.3
20	5862.5	3599.1	20	6758.6	6415.7	20	6949.3	6576.6	1745.4
21	5885.0	3597.2	21	6829.8	6450.7	21	6927.8	6556.2	1745.0
22	5905.2	3604.4	22	6844.1	6466.9	22	6904.0	6534.5	1741.9
23	5922.0	3597.1	23	6901.4	6472.0	23	6963.5	6552.8	1742.8
24	5907.7	3589.7	24	6804.0	6456.8	24	6998.7	6546.3	1744.9
25	5933.8	3595.4	25	6902.7	6528.3	25	6972.0	6546.5	1742.5
26	5941.5	3599.8	26	6912.8	6509.7	26	7005.5	6615.6	1745.6
27	5952.0	3602.5	27	6918.4	6505.3	27	7023.2	6609.4	1748.1(38)
28	5948.9	3614.4	28	6874.9	6495.6	28	6989.3	6578.5	1745.8
29	5921.0	3606.3	29	6872.0	6545.9	29	6946.8	6559.4	1750.4
30	5916.8	3608.9	30	6889.0	6515.1	30	6914.1	6538.5	1740.8
31	5911.7	3612.8				31	6949.5	6513.0	1739.3
MEAN	5820.1	3581.7		6830.1	6450.6		6969.1	6574.1	1745.4

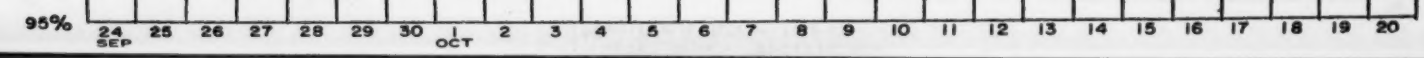
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1998 (September-October 1979)



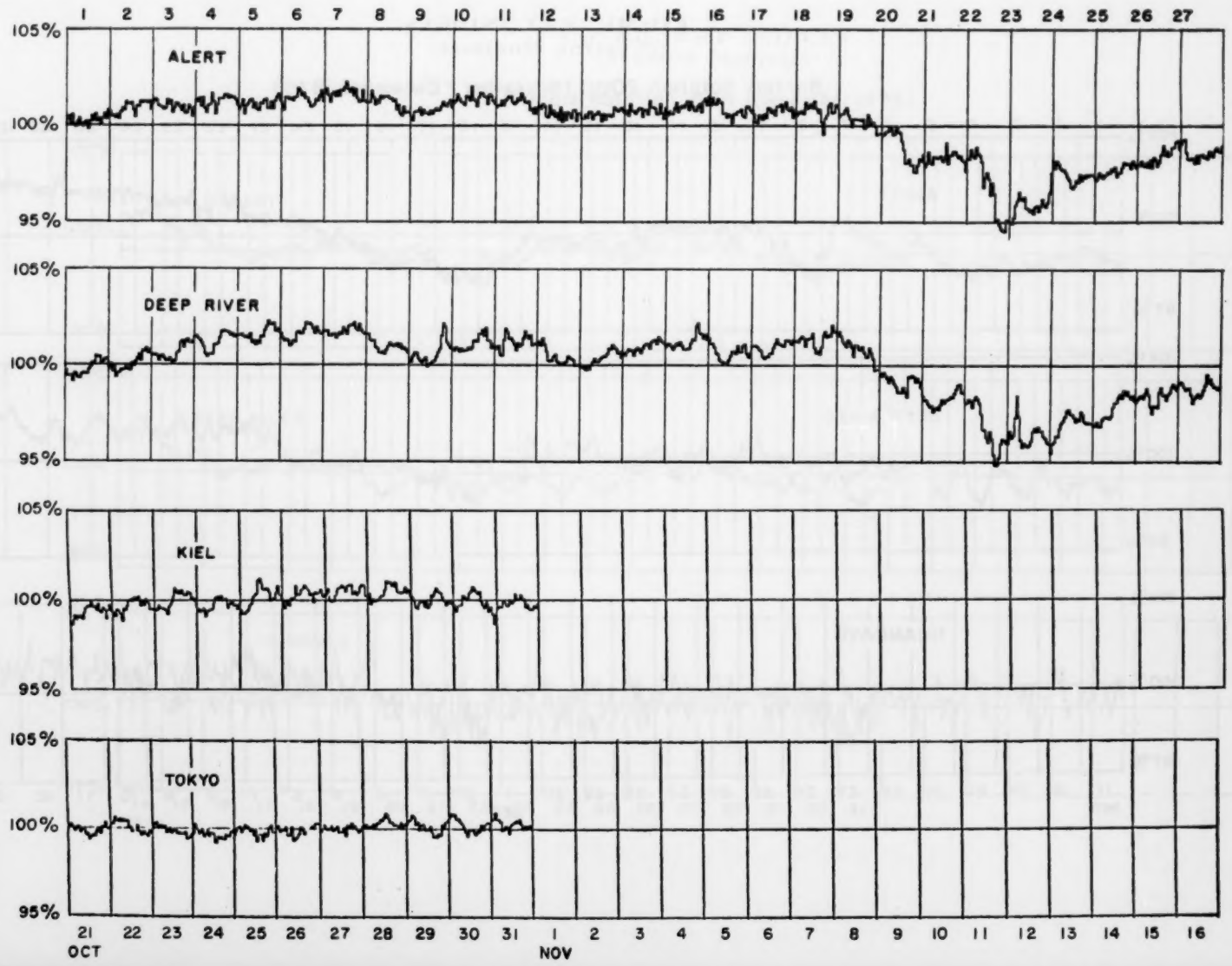
(Neutron Monitors)

Bartel Rotation 1999 (October-November 1979)



(Neutron Monitors)

Bartel Rotation 1999 (October - November 1979)



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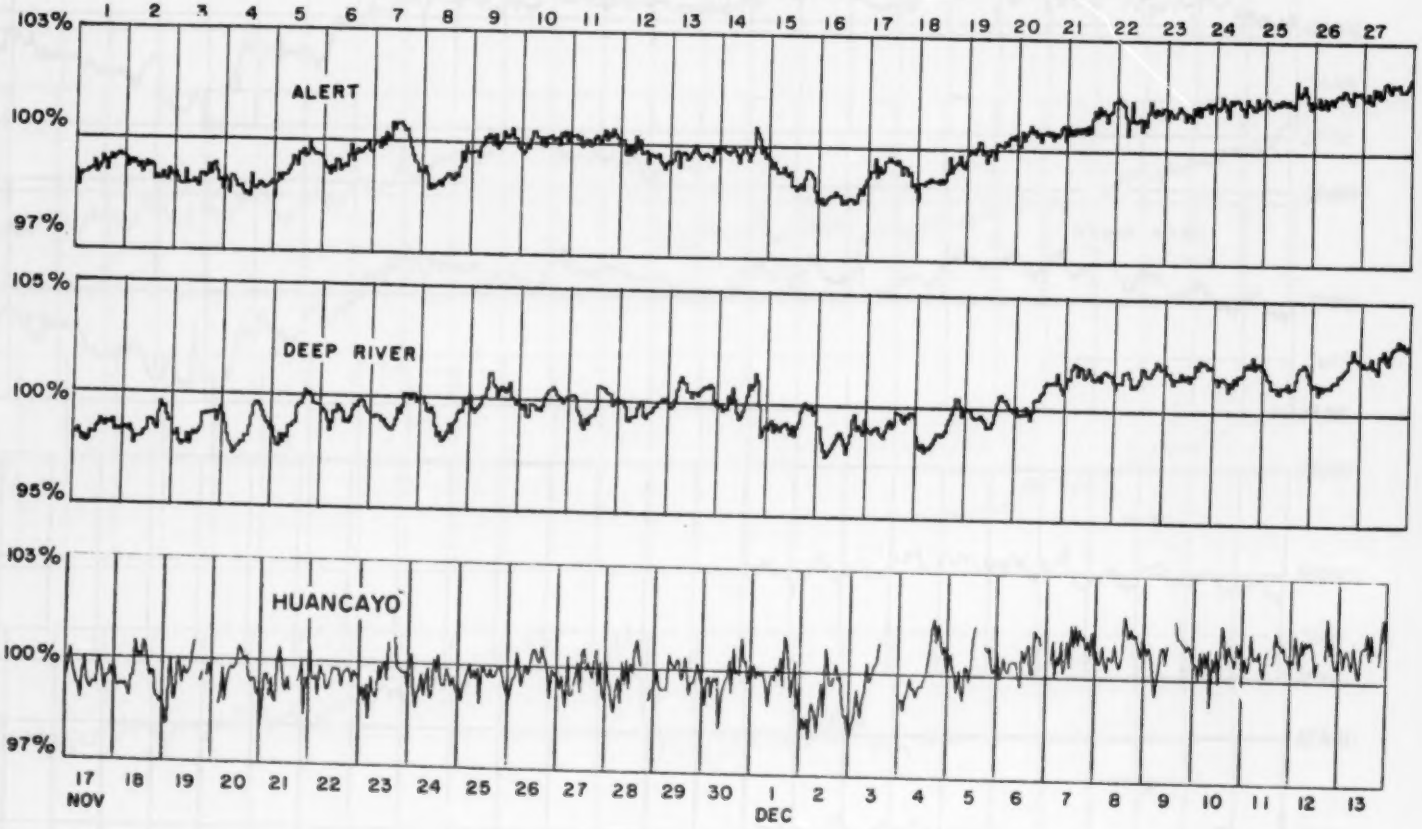
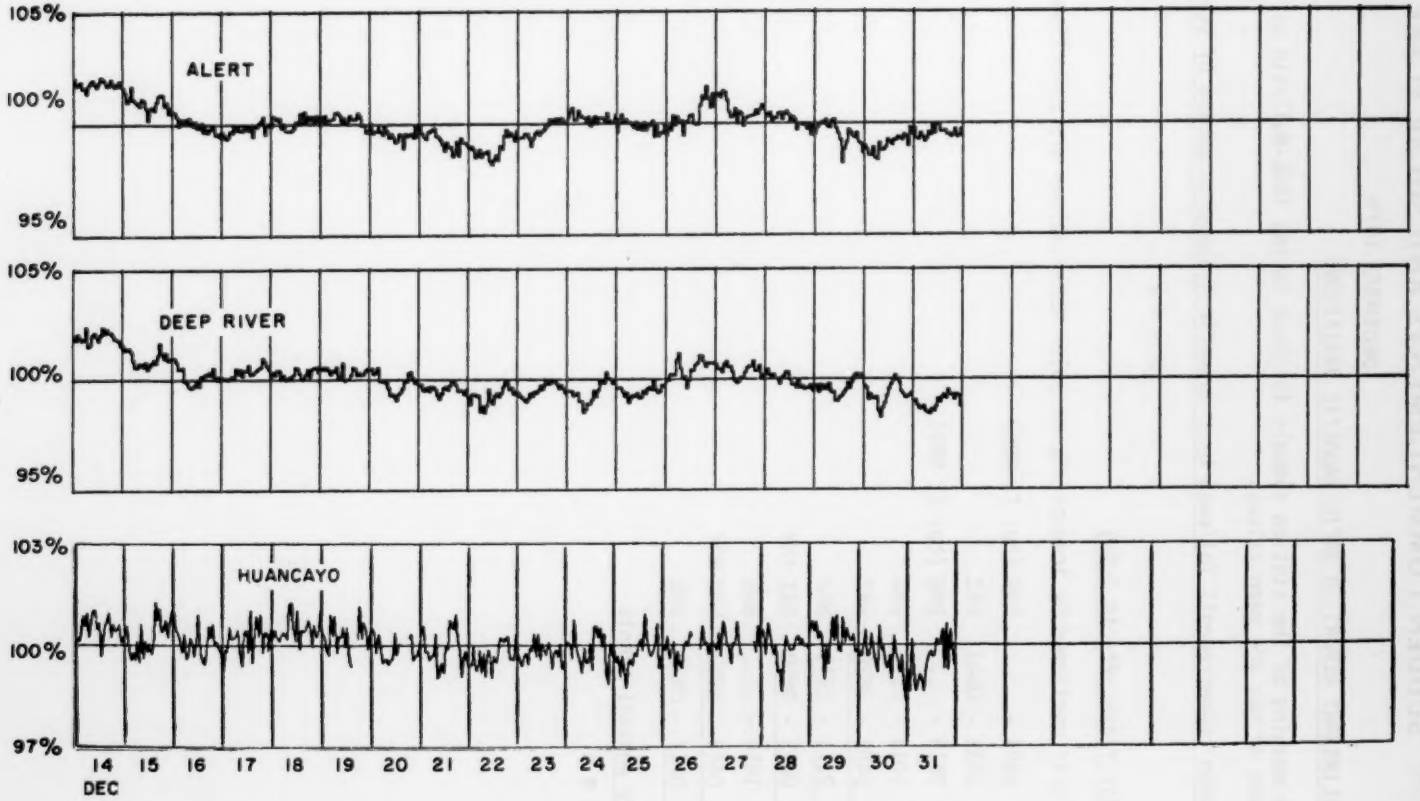
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 2000 (November - December 1979)



COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 2001 (December 1979)



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SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

DECEMBER 1979

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS

The meaning of the station symbols is given in the IAGA-Bulletin no. 32h, page 106-116.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

n o n e

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

03	0654 -	BNG (bp: C: MPO)
04	0834 - 0840	HAZ
04	0914 -	BNG (bp: C: MPO)
12	1016 -	BNG
14	0408 - 0420	HAZ
19	2211 - 2241	HAZ
20	0613 - 0650	HAZ KNY
21	1856 -	BNG
23	0443 - 0508	HAZ KNY
24	0917 - 0938	WNG

Very unusual events

n o n e

☆ GPO 1980—677-108/12

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Explanat

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no427 pt2

MARCH 1980 NUMBER 427 -- Part II

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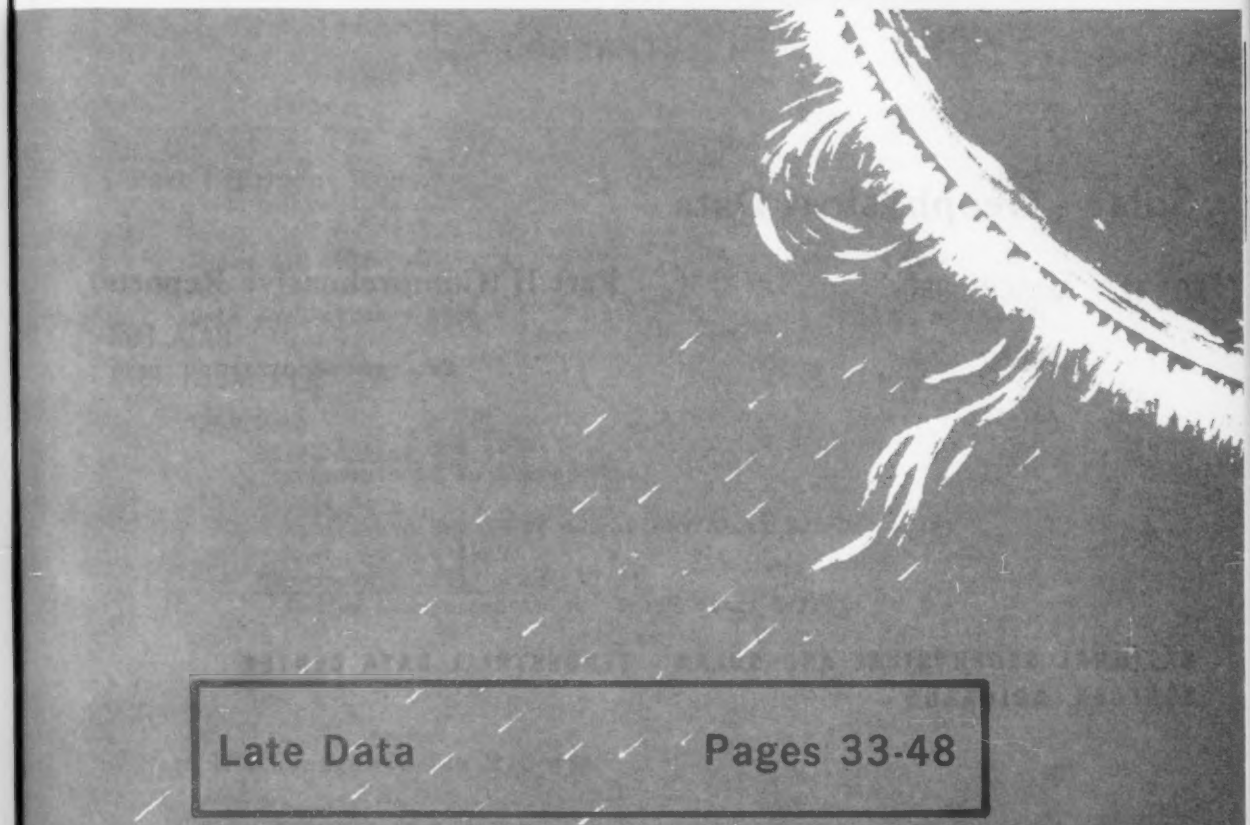
Solar-Geophysical Data comprehensive reports

Data for September 1979 & Miscellanea

Explanation of Data Reports Issued as Number 426 (Supplement) February 1980



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Solar - Geophysical Data

NO. 427 MARCH 1980

Part II (Comprehensive Reports)

DATA FOR
SEPTEMBER 1979

NATIONAL GEOPHYSICAL AND SOLAR - TERRESTRIAL DATA CENTER
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To standardize referencing these reports in the open literature, the following format is recommended:
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SOLAR-GEOPHYSICAL DATA

No. 427

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Chief
Solar-Terrestrial Physics Division

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Energetic Solar Particles Jun, Aug 1979
IMP 8 Electrons, Protons, and Alpha Particles
Active Regions 17 Jul - 13 Aug 1979
Synoptic Solar Maps 17 Jul - 13 Aug 1979

DETAILED COVERAGE FOR 1979-80 PUBLISHED IN "SOLAR-GEOPHYSICAL DATA"

		1979 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	1980 Jan	Feb
A.	SOLAR AND INTERPLANETARY PHENOMENA														
A.1	Sunspot Drawings	415A 52	416A 50	417A 44	418A 48	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	
A.2a	Zurich Provisional Relative Sunspot Numbers Rz	414A 11	415A 11	416A 11	417A 9	418A 11	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9
A.2b	Zurich Final Sunspot Numbers Rz														
A.2c	American Relative Sunspot Numbers RA	414A 11	415A 11	416A 11	417A 9	418A 11	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9
A.3a	Mt. Wilson Magnetograms	415A 52	416A 50	417A 44	418A 48	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	
A.3b	Mt. Wilson Magnetic Characteristics of Sunspots	418B 50	418B 60	417A106	418A108	419A110	420A110	421A112	422A 11	423A110	424A112	425A108		427A112	
A.3c	Kitt Peak Magnetograms	415A 52	416A 50	417A 44	418A 48	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	
A.3d	Mean Solar Magnetic Field (Stanford)	414A 42	415A 44	416A 42	417A 36	418A 38	419A 38	420A 40	421A 40	422A 42	423A 40	424A 40	425A 36	426A 38	427A 38
A.3e	Stanford Magnetograms	415A 52	416A 50	417A 44	418A 48	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	
A.4	H-alpha Filtergrams	415A 52	416A 50	417A 44	418A 48	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	
A.5	Calcium Plage Drawings - Mt. Wilson	415A 52	416A 50	417A 44	418A 48	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	
A.5a	Calcium Plage (Mt. Wilson) and Sunspot Regions	418B 50	418B 60	417A106	418A108	419A110	420A110	421A112	422A114	423A110	424A112	425A108		427A112	
A.5b	Mt. Wilson Daily Calcium Plage Indices	415A125	416A116	417A118	418A118	419A123	420A121	421A125	422A129	423A124	424A125	425A121	426A112	427A122	
A.6	H-alpha Synoptic Charts	415A 48	416A 46	417A 40	418A 42	419A 43	420A 44	421A 44	422A 46	423A 44	424A 44	425A 40	426A 42	427A 42	
A.6b	Synoptic Chart and Active Regions (Paris)	419B 4	420B 4	421B 4	426B 38	426B 39	426B 40	426B 41	427B 48						
A.6c	Stanford Solar Magnetic Field Synoptic Charts	415A 49	416A 47	417A 41	418A 43	419A 44	420A 46	421A 46	422A 48	423A 46	424A 46	425A 42	426A 44	427A 44	
A.6d	Kitt Peak Solar Magnetic Field Synoptic Charts				418A 45	419A 45	420A 48	421A 48	422A 50	423A 48	424A 48	425A 44	426A 46	427A 46	
A.7f	Helium D3 Chromosphere (Big Bear)	---	---	416A 38	417A 33	418A 34	419A 34	420A 35	421A 37	422A 38	423A 41	425B 28	425A 37	426A 39	427A 39
A.7g	Helium Synoptic Maps (KPNO)	414A 34	415A 40	416A 36	417A 32	418A 33	419A 33	420A 34	421A 36	423B 75	425A 46	425A 47	426A 48	427A 48	
A.7h	Coronal Line Emission (Sac Peak)	415A 52	416A 50	417A 44	418A 48	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	
A.8aa	2800 MHz - Daily Values of Solar Flux (ARO-Ottawa)	414A 11	415A 11	416A 11	417A 9	418A 11	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9
A.8ac	2800 MHz - Daily Values of Adj. Solar Flux (ARO-Ottawa)	414A 11	415A 11	416A 11	417A 9	418A 11	419A 11	420A 11	421A 11	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9
A.8g	Daily Values of Adjusted Solar Flux (AFGL)	414A 11	415A 11	416A 11	417A 9	418A 11	419A 11	420A 11	422B 84	422A 11	423A 11	424A 11	425A 11	426A 10	427A 9
A.9cb	8.6 mm Radio Maps of the Sun (NOSC - La Posta)	---	---	---	---	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	
A.9d	2 cm Radio Maps of the Sun (NOSC - La Posta)	---	---	---	---	419A 48	420A 50	421A 50	422A 52	423A 50	424A 50	425A 48	426A 50	427A 50	
A.10a	169 MHz - Interferometric Observations (Nancay)	414A 24	415A 25	416A 25	417A 21	419B 52	420B 69	420A 24	422B 85	422A 25	423A 27	424A 25	426A148	426A 23	427A 23
A.10c	21 cm East-West Solar Scans (Fleurs)	414A 27	415A 28	416A 28	417A 24	418A 25	420B 70	420A 27	421A 28	422A 28	423A 30	424A 28	425A 27	426A 26	427A 26
A.10d	43 cm East-West Solar Scans (Fleurs)	414A 28	415A 29	416A 29	417A 25	418A 26	420B 71	420A 28	421A 29	422A 29	423A 31	424A 29	425A 28	426A 27	427A 27
A.10e	10.7 cm East-West Solar Scans (Ottawa-ARO)	414A 26	415A 27	416A 27	417A 23	418A 24	419A 26	420A 26	421A 27	422A 27	423A 29	424A 27	425A 26	426A 25	427A 25
A.10f	3 cm East-West Solar Scans (Toyokawa)	414A 25	415A 26	416A 26	417A 22	418A 23	419A 25	420A 25	421A 26	422A 26	423A 28	424A 26	425A 25	426A 24	427A 24
A.11k	Solar X-ray Radiation (SOLRAD 11)	415A129	416A120	417A119	418A122	419A126	420A124	421A129	422A133	423A128	426A158	---	---	---	---
A.11g	Solar X-ray (SMS/GOES) (graphs)	419B 33	420B 53	421B 35	422B 31	423B 17	424B 29	425B 20	426B 24	427B 28					
A.12ba	Cosmic Ray Protons (Pioneers 6 & 7)	414A 36	---	---	---	---	---	---	---	---	---	---	---	---	---
A.12bb	Cosmic Ray Protons (Pioneers 8 & 9)	414A 37	---	---	---	---	---	---	---	424B 39	---	---	---	426A 32	427A 33
A.12e	Energetic Solar Particles (IMP H & J)	421B 43	420B 48	421B 30	422B 26	424B 40	427B 37	426B 33	427B 42						
A.13a	Solar Wind (Pioneers 6 & 7)	414A 36	---	---	---	---	---	---	---	---	---	---	---	---	427A 32
A.13ab	Solar Wind (Pioneers 8 & 9)	414A 37	---	---	---	---	---	---	---	424B 39	---	---	---	426A 32	427A 33
A.13d	Solar Wind from IPS Measurements	414A 39	415A 45	416A 39	417A 37	418A 35	419A 25	420A 37	422B 89	422A 39	424B 36	424A 37	426A146	426A 34	427A 35
A.13e	Solar Plasma (IMP H & J)	419B 32	419B 47	421B 29	422B 25	423B 17	424B 28	425B 19	426B 23	427B 27					
A.13f	Solar Wind (Pioneer 12 (Venus))	414A 38	415A 39	416A 35	417A 31	418A 32	419A 32	420A 36	421A 35	422A 37	423A 37	424A 36	425A 32	426A 33	427A 34
A.17	Interplanetary Magnetic Field (Pioneer 8)	---	---	---	---	---	---	---	---	---	---	---	---	---	---
A.17	Interplanetary Magnetic Field (Pioneer 9)	414A 37	---	---	---	---	---	---	---	424B 39	---	---	---	426A 32	427A 33
A.17	Interplanetary Magnetic Field (Pioneer 12)									423B 73	424B 38	425B 29	426A116		
A.17e	Inferred IP Magnetic Field	415A 42	415A 42	417A 34	417A 34	418A 36	419A 36	420A 38	421A 38	422A 40	423A 38	424A 38	425A 34	426A 36	427A 36
A.18	Interplanetary Electric Field (Pioneer 8)	---	---	---	---	---	---	---	---	---	---	---	---	---	---
A.18	Interplanetary Electric Field (Pioneer 9)	414A 37	---	---	---	---	---	---	---	424B 39	---	---	---	426A 32	427A 33
B.	IONOSPHERIC (AND RADIO WAVE PROPAGATION) PHENOMENA														
B.52	Graphs of Transmission Frequency Range	415A162	416A166	417A166	418A166	419A168	420A166	421A166	422A178	423A174	424A154	425A152	426A142	427A154	
B.53	Quality Figures Based on Frequency Ranges	415A161	416A165	417A165	418A165	419A167	420A168	421A165	422A180	423A173	424A153	425A151	426A141	427A153	
C.	FLARE-ASSOCIATED EVENTS														
C.1a	Optical Observations Flares	414A 14	414A 15	416A 14	417A 12	418A 14	419A 14	420A 14	421A 14	422A 14	423A 15	424A 15	425A 15	426A 15	427A 14
C.1ba	Optical Observations Flares (Standardized Data)	420B 82	422B 38	423B 25											
C.1d	Flare Patrol Observations	414A 23	415A 24	416A 24	417A 20	418A 23	419A 24	420A 23	421A 25	423B 72	423A 26	424A 24	425A 24	427A158	427A 22
C.1d	Flare Patrol Observations	420B120	422B 72	424B 45											
C.1e	Flare Indices (by day)	420B119	422B 72	423B 58											
C.1f	Flare Indices (by Region)	422B 91	423B 83												
C.3	Solar Radio Waves - Outstanding Occurrences	419B 8	420B 8	421B 10	422B 4	423B 4	424B 4	425B 5	426B 5	427B 5					
	Solar Radio Waves - Fixed Frequencies - Selected	414A 29	415A 30	416A 30	417A 26	418A 28	419A 27	420A 29	421A 30	422A 30	423A 32	424A 30	425A 29	426A 28	427A 28
C.3t	43.25, 80 and 160 MHz Selected Bursts (Culgoora)	415A147													
C.4a	Solar Radio Spectral Obs. (Fort Davis)	417B 60	417B 62	417A138	420B 72	420B 75	420A139	423B 76	423B 78	423A143	426A149	426A153	426A117	427A126	
C.4d	Solar Radio Spectral Obs. (Culgoora)	415A129	416A134	417A138	418A137	419A142	420A139	421A145	422A149	423A143	424A130	425A125	426A117	427A126	
C.4e	Solar Radio Spectral Obs. (Weissenau)	415A129	416A134	417A138	418A137	419A142	420A139	422B 86	422A149	423A143	424A130	425A125	426A117	427A126	
C.4f	Solar Radio Spectral Obs. (Sagamore Hill)	415A129	416A134	417A138	418A137	419A142	420A139	421A145	---	---	---	---	---	---	
C.4h	Solar Radio Spectral Obs. (Dwingeloo)	415A129	416A134	417A138	418A137	419A142	---	421A145	422A149	423A143	424A130	425A125	426A117	427A126	
C.4i	Solar Radio Spectral Obs. (Bleien)	415A129	416A134	417A138	418A137	419A142	---	---	422A149	423A143	424A130	425A125	426A117	427A126	
C.4j	Solar Radio Spectral Obs. (Manila)	415A129	416A134	417A138	418A137	419A142	420A139	421A145	422A149	---	424A130	425A125	426A117	427A126	
C.4k	Solar Radio Spectral Obs. (Learmonth)								422A149	423A143		425A125		427A126	
C.4l	Solar Radio Spectral Obs. (Palehua)								422A149	423A143		425A125		427A126	
C.5e	Solar X-ray (SMS/GOES) (graphs)	419B 33	420B 53	421B 35	422B 31	423B 17	424B 29	425B 20	426B 24	427B 28					
C.6	Sudden Ionospheric Disturbances	415A126	416A117	417A1[illegible]4	418A119	419A12[illegible]	420A122	421A126	422A130	423A125	424A126	425A122	426A113	427A123	
D.	GEOMAGNETIC AND MAGNETOSPHERIC PHENOMENA														
D.1a	Geomagnetic Indices Kp, Kn, Ks, Km, Ap, aa, Cp	415A155	416A158	417A158	4[illegible]A158	419A1[illegible]0	420A160	421A159	422A170	423A166	424A147	425A144	426A133	427A148	
D.1ba	27-day Chart of Kp Indices	415A157	416A160	417A160	418A[illegible]60	419[illegible]162	420A162	421A161	422A172	423A168	424A149	425A146	426A135	427A150	
D.1c	27-day Chart of C9	426A136	426A136	426A136	426A1[illegible]	4[illegible]A136	426A136	426A136	426A136	426A136	426A136	426A136	426A136		
D.1ca	aa graph 1868 - present	426A137	426A137	426A137	426A137	[illegible]26A137	426A137	426A137	426A137	426A137	426A137	426A137	426A137		
D.1d	Principal Magnetic Storms	415A158	416A163	417A163	418A163	419A165	420A165	421A164	422A175	423A171	424A152	425A149	426A140	427A151	
D.1e	Reduced Magnetograms														
D.1f	Sudden Commencement and Solar Flare Effects	415A160	416A164	418B 76	419B 63	419A166	421B 42	422B 90	422A177	423A172	425B 33	425A150	427A164	427A152	
D.1g	Equatorial Indices Dst	416B 90	416A162	417A162	418A162	419A164	420A164	421A163	422A174	423A170	424A151	425A148	426A139		
D.1h	Geomagnetic Substorm Log (Boulder)	414A 43	415A 46	416A 43	417A 38	418A 39	419A 39	420A 41	421A 41	422A 43	423A 42	424A 41	425A 38	426A 40	427A 40
F.	COSMIC RAYS														
F.1a	Cosmic Ray Neutron Counts (Deep River)	415A154	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161	425B 32	427A159	427A159		
F.1b	Cosmic Ray Neutron Counts (Climax)	416B 88	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161	425B 32	425A143	426A132		
F.1e	Cosmic Ray Neutron Counts (Alert)	415A154	416A151	417A151	418A151	420B 78	420A155	421A158	422A165	423A161	425B 32	427A159	427A159		
F.1f	Cosmic Ray Neutron Counts (Calgary)														
F.1h	Cosmic Ray Neutron Counts (Thule)	419B 62	419B 62	419B 62	419B 62	419A153	420A155	421A158	422A165	423A161	424A146	425A143	426A132	427A147	
F.1i	Cosmic Ray Neutron Counts (Kiel)	415A154	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161	427A159	425A143	426A132	427A147	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	415A154	416A151	417A151	418A151	419A153	420A155	421A158	422A165	423A161	427A159	425A143	426A132	427A147	
F.1k	Cosmic Ray Neutron Counts (Kula)													---	
F.1l	Cosmic Ray Neutron Counts (Huancayo)		417B 67	418B 72	419B 58	420B 79	420A155	421A158	423B 81	425B 32	425B 32	426A177	427A159		
H.	MISCELLANEOUS														
H.60	IUWDS Alert Decisions	414A 4	415A 5	416A 4	417A 4	418A 5	419A 5	420A 5	421A 5	422A 4	423A 4	424A 4	425A 4	426A 4	427A 4
H.62	Abbreviated Calendar Record	420B 58	422B 76	423B 62											

Notes:

"415A 52" listed under 1979 Jan means that the sunspot drawings for January 1979 were contained in *Solar-Geophysical Data* Number 415 - Part I, beginning on page 52.

A = Part I, B = Part II.

----- = no data available.
blank = data not yet received.

SGD 427 Part II (Comprehensive)

SEPTEMBER 1979 DATA

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NOTE ON SOLAR FLARE DATA DELAY:

Solar Flare data for publication are now twelve months delayed from date of observation, rather than the usual six months. Several problems have caused this delay. A basic step of flare processing is using the Carte Synoptique de la Chromosphere to identify active centers. Because these Carte Synoptique data are also currently delayed, the Meudon Observatory staff, who performs this analysis, are hindered in their efforts. Meudon is also changing to another computer, which can mean computer program conversion problems that can delay the work. NGSDC is also working on some conversion problems.

A delay in the final listing of the solar flare data also delays the Daily Flare Index, the Regional Flare Index and the Abbreviated Calendar Record. We deeply regret this situation and hope it will improve in the near future. We ask for your patience in the interim.

For researchers who need the solar flare data more promptly, NGSDC has available "Preliminary" final listings of solar flares for April-August 1979. These fairly complete listings do not have the final Meudon corrections, and thus will not be published until we receive these corrections. However, they are available on request with the stipulation that they are recognized as "Preliminary" final listings when used in research projects. A fee may be charged for reproducing these data if a large demand ensues. Please contact the editor, Helen Coffey, for copies of these listings (phone: (303) 499-1000 X6223; FTS: 323-6223; Telex: SOLTERWARN BLDR 45897.)

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

SEPTEMBER 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
1	100	HIRA	46 C	0317.3	0318.5	3	900	300		0
	127	TORN	44 NS	0730 E		250 D		3.3		VO.INCOMPLETE
	200	ONDR	+1 F	0650	0657.6	50	10	2.8		
	200	ONDR	2 S/F	1130.5	1131.4	2	4	1.7		
	226	HARS	45 C	1317.2	1317.2	4	250	80		
	260	ONDR	45 C	1317.5	1317.5	4	24	2		
	234	POTS	4 S/F	1317.6	1317.7	.2	200	20		
	226	HARS	45 C	1524.4	1526.4	2.8	310	100		
	9400	HUAN	20 GRF	1730	1800.2	90.7	7.9	6.1		0
	226	HARS	45 C	1758.4	1800	3.5	225	75		
	2800	OTTA	260 FAL	1800	1840	40	4.4	2.2		
	2800	OTTA	1 S	1851	1854	9	9.4	3.2		
	2695	PENT	240 R	2315	2335	20	6.4	3.2		
2	2695	PENT	4 S/F	0021	0034.3	32	143	49		
	500	HIRA	46 C	0022	0024.4	6	14	6		MR
	5730	IRKU		0022	0033.5	23	57 D			L
	5730	IRKU	2 S	0022	0035.9		57 D			L
	200	HIRA	46 C	0023	0033	25	70	35		0
	100	HIRA	46 C	0028	0040.5	38	90	20		0
	17000	NOBE	20 GRF	0030.7	0036.8	46	15			0
	35000	NAGO	20 GRF	0030	0055	40	10			
	5730	IRKU	29 PBI	0045		45	21			L
	2695	PENT	29 PBI	0053	0053	40 D	10.2			
	3100	CRIM	20 GRF	0547	0558	70	6	2		
	3100	CRIM	1 S	1015	1016	3	4	1		
	9140	ARCE	1 S	1026.6	1027.7	3				
	2800	OTTA	27 RF	1250		185	2.6	2.4		
	2800	OTTA	24 R	1250	1305	15	2.6	1.3		
	2800	OTTA	24P R	1305		150	2.6			
	2800	OTTA	1 S	1529	1530	2.5	1.6	.8		
	2800	OTTA	26 FAL	1535	1555	20	-2.6	-1.3		
	9400	HUAN	8 S	1611.2	1611.4	.9	53.5	17.3		L
	9400	HUAN	20 GRF	1752.6	1802.8	30.4	5.2	1.9		R
	9400	HUAN	8 S	1843.6	1849.8	.9	86.3	28.7		L
	2800	OTTA	240 R	2000	2020	20	3.4	2		
3	2950	GORK	20 GRF	0425.8	0442.3	33	25			
	9100	GORK	20 GRF	0429.5	0442	50	19	10		
	100	HIRA	46 C	0435.8	0436.5	2.5	950	350		0
	200	HIRA	46 C	0437	0440	8	60	20		0
	100	HIRA	46 C	0441	0450	13	130	60		WL
	261	ONDR	44 NS	0620 E		469 D	27	1		
	9400	HUAN	3 S	1130.5	1132.7	3.4	17.6	9.1		0
	536	ONDR	3 S	1337.8	1337.8	.3	21			
	9400	HUAN	3 S	1856.7	1858.1	1.4	80.3	40.8		L
	2800	OTTA	4 S/F	1856	1858.1	4	23	7.6		
	9400	HUAN	29 PBI	1859.6	1859.8	20.7	5.4	2.7		L
	2800	OTTA	30 PBI	1900	1900	27	3.4	1.2		
	2800	OTTA	1 S	1901	1901.8	1.5	2	1		
	2800	OTTA	8 S	1908	1908.2	.2	4.4			
	2800	OTTA	20 GRF	1955	2020	105	2.6	1.3		
4	3100	CRIM	1 S	0600	0602.5	5	14	4		
	2950	GORK	1 S	0602.20	0602.2	1.90	5.6			
	260	ONDR	44 NS	0633 E		457 D	61	3		
	930	BORD	8 S	0707.2	0707.3	.2	24	1		
	3100	CRIM	26 FAL	0713	0355		6			
	930	BORD	8 S	0742.6	0742.7	.2	21	1		
	930	BORD	8 S	0821.5	0821.6	.2	22	1		
	536	ONDR	42 SER	0837	0848.5	9.5	38			
	536	ONDR	42 SER	1229	1309	51	65			
	2800	OTTA	2 S/F	1309.3	1310	1.5	4			
	9500	POTS	20 GRF	1320	1348	40	13			
	9400	HUAN	20 GRF	1328.6	1335	58.8	10.1	3.5		L
	2800	OTTA	27 RF	1336		120	2.4	2.3		
	2800	OTTA	24 R	1336	1338	2	2.4	1.2		
	3000	POTS	20 GRF	1338	1341	45	6.7			
	1470	POTS	20 GRF	1338	1355.5	57	3.1			
	2800	OTTA	24P R	1338		112	2.4			
	2800	OTTA	1 S	1341	1342	2	2.6	1.3		
	2800	OTTA	26 FAL	1530	1536	6	-2.4	-1.2		
	2800	OTTA	21 GRF	1600	1616	270	6	3		
	2800	OTTA	22 GRF	1704	1710	70	3.8			
	9400	HUAN	20 GRF	1727	1802.5	69.5	5.1	2.5		0
	261	HIRA	44 NS	2020 E	0325	760 D	53	15		MR
	9400	HUAN	20 GRF	2102.6	2115.9	13.3	8.4	4.8		0
5	17000	NOBE	20 GRF	0405.2	0412.8	145	19			0
	5730	IRKU		0406	0412.7		26			L
	5730	IRKU	45 C	0406	0409.1	14	12			L
	5730	IRKU	1 S	0439.9	0441.1	4	8			L
	262	IZMI	44 NS	0600 E		360 D	50			
	260	ONDR	44 NS	0623 E		465 D	81	10		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

SEPTEMBER 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} MEAN	INT	POLARIZATION OR REMARKS
4	127	TOKN	44	NS	0630 E	1230.7	450 D	261	3.7		V1,DISTURBED
	2950	GORK	1	S	0655.8	0656.6	2.3	3.6	1.8		
	9100	GORK	22	GRF	0656	0707	21.3	7	3		
	9100	ARCE	1	S	0705.5	0706.1	6.5				
	930	BORO	46	C	0705.9	0705.9	2.8	22	4		
	9500	POTS	1	S	0706	0707	2.5	6.3			
	3000	POTS	4	S/F	0706	0706.6	2.7	32			
	1470	POTS	4	S/F	0706	0707.4	2.7	7.3			
	950	GORK	4	S/F	0706.1	0706	3.8	6			
	650	GORK	4	S/F	0706.1	0706.3	2.6	27.5	7		
	5730	IRKU	1	S	0706.2	0707	3	13			L
	2950	GORK	4	S/F	0706.3	0706.8	2.5	25			
	536	ONDR	45	C	0706.4	0706.4	3.5	88	5		
	606	MANI	4	S/F	0706.4	0706.6	2.4	58.1	19.4		
	1415	MANI	1	S	0706.8	0707.6	2.2	9.8	3.3		
	2650	OWIN	45	C	0706	0707	3	45	15		
	3100	CRIM	3	S	0706	0709	3	54	10		
	930	BORO	8	S	0750.6	0750.6	.2	28	1		
	930	BORO	8	S	0813.8	0813.8	.2	55	1		
	930	BORO	8	S	0857.3	0857.3	.1	49	1		
	930	BORO	8	S	0918.2	0918.2	.1	38	1		
	536	ONDR	2	S/F	0946	0946.8	1	16			
	930	BORO	8	S	0958	0958.1	.2	26	1		
	536	ONDR	2	S/F	1048.2	1049	.8	13	2		
	930	BORO	8	S	1100.5	1100.6	.5	61	2		
	930	BORO	41	F	1104.5	1104.7	.5	66	2		
	7000	SAOP	40	F	1151	1309	107				
	25	UPIC	2	S/F	1214.9	1215.1	.7				
	55	UPIC	2	S/F	1215	1215.1	.4				
	2800	OTTA	1A	S	1257.5	1259	2.5	2.4	1.2		
	2800	OTTA	8	S	1258.8	1258.8	.1	2.6			
	2800	OTTA	4	S/F	1432.6	1433.2	1	34	17		
	113	POTS	4	S/F	1456.4	1456.6	.6	380	75		
	2800	OTTA	20	GRF	1840	1940	80	3.4	1.8		
	9400	HUAN	20	GRF	1934.6	2021	64.1	9.8	4.7		R
	200	MIRA	44	NS	2020 E	2115	760 D	30	5		MR
6	100	MIRA	43	NS	0040	0306	210	46	18		SR
	33	UPIC	43	NS	0625.1	1336.4	429.9				
	29	UPIC	43	NS	0626.3	1336.6	430.4				
	260	ONDR	44	NS	0653 E		425 D	81	6		
	536	ONDR	43	NS	0655		305	24	12		
	200	MIRA	44	NS	2020 E	0730	760 D	55	15		MR
	6100	KISV	27	FF	0726	0736	60	7			
	202	IZMI	5	S	0906.4	0906.5	.5	125	75		
	113	POTS	42	SER	1136.5	1139.9	13	420	8		
	202	IZMI	4	S/F	1138.7	1139	1.3	115	60		
	113	POTS	4		1211.7	1212.4	1.3	2500	100		
	113	POTS	42	SER	1332.4	1336.3	15	4200	15		
	9400	HUAN	20	GRF	1333.5	1336.7	10.2	6.6	4.1		R
	7000	SAOP	4	S/F	1335	1336.6	6	16			O
	2800	OTTA	1	S	1335.5	1336.5	2	2	1		
	2800	OTTA	21	GRF	1435	1537	255	7.6	3.8		
	9400	HUAN	40	F	1635.3	1636.1	2.3	81.9	22.5		
	2800	OTTA	20	GRF	1635	1650	25	2.6	1.9		
	225	MARS	45	C	1645.5	1646	1.7	530	100		
	10400	BERN	3		1645.5	1646.5	9	14			
	9100	ARCE	1	S	1645.6	1646.1	1.6				
	7000	SAOP	3	S	1645.7	1647	5.6	30			AL
	9400	HUAN	3	S	1646.1	1646.9	2.2	13.1	7.4		
	7000	SAOP	40	F	1836		69				
	2800	OTTA	1	S	1929	1930	7	2.4	1.2		
7	100	MIRA	46	C	0056	0057.6	3.5	9000	2000		WL
	500	MIRA	46	C	0056	0056.7	3	130	40		WR
	200	MIRA	46	C	0056	0057.5	3	1000	300		WL
	1420	SYDN	47	GB	0056.3	0056.9	4.7				
	760	SYDN	40	F	0056.4	0057	3.1				
	17000	NOBE	7	C	0056.6	0057.4	14	24			B
	2695	PENT	4	S/F	0056	0057.4	4	40	23.6		
	6600	MANI	4	S/F	0057	0056.7	4.5	122.9	41		
	5730	IRKU	2	S	0057.5	0058.4	3	48	11		L
	606	MANI	4	S/F	0057.7	0058.2	3	249.4	83.1		
	1415	MANI	4	S/F	0057.7	0058.1	3	352.6	117.5		
	2695	MANI	1	S	0058	0058.6	2.5	34.8	11.6		
	4995	MANI	4	S/F	0058	0058.8	3.5	134.5	44.8		
	5730	IRKU	1	S	0121	0122.4	3	8	4		L
	500	MIRA	20	GRF	0430	0725	260 D	18	6		SR
	113	POTS	44	NS	0640 E	0659	300 D	70			
	930	BORO	8	S	0655.7	0655.7	.1	28	1		
	930	BORO	8	S	0726.5	0726.6	.2	55	1		
	930	BORO	5	S	0757.4	0757.5	.2	32	1		
	930	BORO	8	S	0827	0827.1	.1	23	1		
	202	IZMI	7	C	1030.3	1031	1.5	250	150		
	113	POTS	4	S/F	1111.3	1113.2	3.3	600	35		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

SEPTEMBER 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
					UT	UT	MINUTES	PEAK	MEAN		
	127	TORN	45	C	1112	1113.3	4	468	73		
	202	IZMI	46	C	1112.5	1114.7	2.5	150	50		
	3000	PDTS	1	S	1113	1115	3.5	5			
	1470	PDTS	4	S/F	1113	1113.8	3.5	6.6			
	930	BORO	41	F	1113	1113.2	1	15	2		
	3000	PDTS	3	S	1147.5	1148.5	2	11			
	1470	PDTS	3	S	1147.5	1148.7	2.5	5.9			
	2650	DWIN	1	S	1148	1148	2	10	5		
	930	BORO	41	F	1148	1152	7	28	2		
	2650	DWIN	6	S	1218			30			
	2650	DWIN	8	S	1222			45			
	7000	SAOP	4	S/F	1317	1318.8	14	12			19L
	9100	ARCE	1	S	1317.3	1318.1	4.2				
	2800	OTTA	1	S	1317	1319	3	2	1		
	9400	HUAN	1	S	1316	1318.6	2.7	8.6	6.6		L
	930	BORO	41	F	1415.2	1415.2	.4	25	2		
	9400	HUAN	20	GRF	1556	1615.9	41	10.4	3.4		0
	2800	OTTA	20	GRF	1607	1615	15	1.6	.8		
	7000	SAOP	4	S/F	1615.4	1615.9	17.4	12			15L
	2800	OTTA	1	S	1712	1713	1.1	3.4	1.6		
	2800	OTTA	28	GRF	1725	1730	12	2.4	1.2		
	2800	OTTA	20	GRF	1635	1640	15	1.6	.8		
	7000	SAOP	3	S	1906.5	1907.5	1.2	21			0
	7000	SAOP	41	F	1906.5						3 BURSTS
	9400	HUAN	3	S	1906.8	1907.3	1.2	17.3	8.6		0
	7000	SAOP	20	GRF	1918		17.2	8			0
	9400	HUAN	20	GRF	1937.3	1951.5	36.3	12.1	4.1		0
	7000	SAOP	45	C	1946.8	1950	11.6	27			17L
	2800	OTTA	4	S/F	1948.4	1948.7	4.6	40	20		
	2800	OTTA	29	PBI	1953	1953	7	3.4	1.7		
	100	MIRA	43	NS	0400	0636	300 D	100	50		SR
	202	IZMI	44	NS	0600 E		360 D	50			
	260	ONDR	44	NS	0645 E		433 D	54	12		
	127	TORN	44	NS	0745 E	1025	435 D	432	14		W2
	33	UPIC	43	NS	0912.4		221.1				
	29	UPIC	43	NS	0914.2	1113.9	221.4				
	200	MIRA	44	NS	2020 E	2205	760 D	30	5		SR
	2800	OTTA	3	S	2057.7	2058	1	37	18		
	2800	OTTA	29	PBI	2058.7	2058.7	3	4.4	2.2		
	2695	PENT	240	R	2300	2420	80	10.2	5.1		
8	29	UPIC	43	NS	0528.7	0845.5	460.1				
	33	UPIC	43	NS	0529.5	0845	459.5				
	127	TORN	44	NS	0600 E	1202.3	360 D	99	.4		W1
	260	ONDR	44	NS	0630 E		464 D	27	4		
	15000	KISV	28	PRE	0625	0647	22	21			
	1470	PDTS	22	GRF	0646	0649.2	40	6.7			
	9100	ARCE			0646.1	0647.2	2.1				
	9100	ARCE	45	C	0646.1	0647.2	6.6				
	3000	PDTS	29	PBI	0646.5	0648.3	66	48			
	9100	GORK	45	C	0646.7	0647.9	7.2	290			
	9100	GORK			0646.7	0649.9		210			
	17000	NOBE	45	C	0646.8	0648.1	6.1	155			0
	5730	IRKU			0646	0648		67			L
	5730	IRKU	45	C	0646	0647.2	6	23			L
	5730	IRKU			0646	0650		136			L
	8800	MANI	3	S	0647.3	0648.4	7.7	128.6	42.8		
	4995	MANI	4	S/F	0647.6	0648.4	6.2	353.6	118		
	2650	DWIN	45	C	0647	0648	5	30	25		
	2950	GORK	45	C	0647	0648.2	6	42	20		
	35000	NAGO	5	S	0647	0648	7	25			
	6100	KISV			0647	0650		112			
	10715	DWIN	45	C	0647	0648	6	190	120		SUNRISE
	2950	GORK			0647	0649.8		40	20		
	15000	KISV			0647	0648		14 D			
	6100	KISV	45	C	0647	0648	20	194			
	15000	KISV	45	C	0647	0650	3	108			
	9500	PDTS	29	PBI	0647	0647.7	56	253			
	9100	ARCE			0648.2	0649.2	4.7				
	17000	NOBE	29	PBI	0652.9	0652.9	17	19			0
	9100	ARCE	29	PBI	0652.9		19				
	930	BORO	8	S	0751.7	0751.8	.2	33	1		
	113	PDTS	8	S	0821.6	0821.8	.1	600	200		
	113	PDTS	4	S/F	0544	0544.6	1.2	200	5		
	9100	GORK	20	GRF	0858.2	0909.1	39	8	4		
	1470	PDTS	3	S	0901	0902	2	6			
	930	BORO	8	S	0936	0936.1	.2	38	1		
	113	PDTS	8	S	1202.2	1202.3	.1	200	70		
	9400	HUAN	20	GRF	1301.7	1312	44.3	5	1.8		0
	2800	OTTA	20	GRF	1440	1445	20	2.2	1.1		
	7000	SAOP	20	GRF	1514.6			5			0
	2800	OTTA	260	FAL	1537	1635	58	-2.8	-1.4		
	9400	HUAN	8	S	2043.9	2044.9	1.3	199.6	77.1		L
9	17000	NOBE	20	GRF	0240	0249.5	21.8	19			0

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	260	ONDR	+4	NS	0030 E		470 D	104	6		
	33	UPIC	+3	NS	0919.1	0920.1	236.8				
	29	UPIC	+3	NS	0919.1	0920.2	236				
	536	ONDR	+5	C	0901	0905.2	7	27			
	234	PUTS	42	SER	0919.9	0924.7	6.5	525	2		
	113	PUTS	+1	F	0919.9	0920.2	3.9	225	2		
	226	HARS	+5	C	0920	0920.2	.5	600	125		
	262	IZMI	+	S/F	0920	0920	1	300	100		
	226	HARS	45	C	0924.2	0924.6	1	550	60		
	970	BORO	8	S	0924.8	0924.9	.4	13	2		
	113	PUTS	42	SER	1012.9	1029.3	19	200	1 E		
	536	ONDR	+2	SER	1048	1220.3	102	221			
	113	PUTS	42	SER	1052.7	1052.7	13	180	1 E		
	262	IZMI	5	S	1100.3	1100.3	.8	90	40		
	3100	CPIM	1	S	1100.5	1101.5	1	5	1		
	127	TORN	45	C	1145.1	1145.6	2.5	14	6.2		
	9100	ARCE	3	S	1210.9	1211.5	1.5				
	9400	HUAN	3	S	1211.1	1212.5	3.7	17.2	5.9		R
	7000	SAOP	4	S/F	1211.4	1212.4	1	37			9R
	2800	OTTA	3	S	1211.6	1212.5	2.2	34	9		
	970	BORO	3	S	1211	1212.6	5	20	4		
	2650	OWIN	3	S	1211	1212	2	40	20		
	1470	PUTS	3	S	1211.5	1212.5	3.5	28			
	3000	PUTS	3	S	1211.7	1212.4	1.8	35			
	9500	PUTS	3	S	1212	1212.4	1.2	19			
	127	TORN	45	C	1227.3	1228.4	5.3	451	18		
	261	ONDR	+6	C	1227.6	1228.7	3.5	222 D	18		
	113	PUTS	+1	F	1227.9	1228.5	1.2	2100	500		
	1470	PUTS	1	S	1228	1228.5	2	3.7			
	234	PUTS	+1	F	1228.2	1228.6	1.4	280	18		
	226	HARS	45	C	1228.2	1228.4	2	550	60		
	2800	OTTA	1	S	1228	1228.7	1.2	3	1.5		
	2800	OTTA	2	S/F	1356	1359.7	3.5	3.6	1.2		
	226	HARS	45	C	1359.5	1359.5	1	500	60		
	7000	SAOP	1	S	1414	1415.2		5			0
	2800	OTTA	1	S	1534.5	1537	8	6.6	3.3		
	2800	OTTA	1	S	1656	1657	2	1	.5		
	2800	OTTA	1	S	1728	1729.5	2	3.6	1.2		
	7000	SAOP	+	S/F	1921.5	1923		13			19R
	2800	OTTA	3	S	1922	1923	2	11.6	3.8		
	2800	OTTA	22	GRF	1945	1946.5	45	5.4			
	2800	OTTA	22	GRF	2035	2053	55	4.4	2.2		
10	650	GORK	20	GRF	0510.2	0510.2	11.2	7	2.5		
	300	MIRA	4	S/F	0515.3	0516	3	10	4		HR
	700	SYDN	+	S	0515.3	0516.4	2.6				
	9100	GORK	+	S/F	0515.4	0516.4	1.8	40	20		
	1400	SYDN	3	S	0515.4	0516.5	2.2				
	2950	GORK	45	C	0515.4	0516.6	10.4	37	19		
	950	GORK	3	S	0515.4	0516.6	2.1	6			
	2950	GORK			0515.4	0521.6		18	9		
	200	MIRA			0515.5	0520		110			HR
	1415	MANI	4	S/F	0515.5	0516.8	3.2	17.6	5.9		
	200	MIRA	+6	C	0515.5	0516.5	6	1000	70		HR
	8750	IRKU	+5	C	0515.5	0516.4	12	51	12		
	8750	IRKU			0515.5	0521.7		19			
	17000	NOBE	20	GRF	0515.6	0521.7	26	19			0
	2695	MANI	3	S	0515.6	0516.8	2.4	43.4	14.5		
	4955	MANI	3	S	0515.6	0516.8	2.3	35.3	11.8		
	606	MANI	1	S	0515.7	0516.3	2.3	3.3	1.1		
	29	UPIC	2	S/F	0515.9	0516.2	.8				
	103	MIRA	+2	SER	0515	0516	15	4000			HL
	9100	GORK	10	PBI	0516.2	0516.8	12.4	26			
	33	UPIC	2	S/F	0516	0516	1.9				
	3100	CPIM	3	S	0516	0517	10	52	15		
	35000	NAGO	20	GRF	0516	0522	11	7			
	9100	GORK	1	S	0520.8	0522.3	2.4	7	3.5		
	260	ONDR	+4	NS	0025 E		+62 D	168			
	33	UPIC	+3	NS	0920	1013.1	374.2				
	29	UPIC	+3	NS	0920	1013.2	374.7				
	127	TORN	+3	NS	0913	0941.6	78	14	.7		V1
	127	TORN	+3	NS	1132	1155.2	38	368	.1		V1
	113	PUTS	4	S/F	1012.7	1012.8	.2	190	50		
	536	ONDR	+2	SER	1054	1154.6	62	32			
	113	PUTS	+2	SER	1136.1	1155	21	1000	15		
	234	PUTS	4	S/F	1154.7	1155	.4	420	80		
	262	IZMI	5	S	1154.3	1154.8	1	750	300		
	7000	SAOP	20	GRF	1203	1203.6	26	9			
	9500	PUTS	8	S	1211.2	1211.3	.5	28			
	2800	OTTA	6	S	1215.9	1215.5	.2	5.4			
	127	TORN	4	S/F	1223.3	1223.5	1.5	170	17		
	113	PUTS	+	S/F	1225.4	1225.6	.4	200	30		
	127	TORN	7	C	1303.2	1303.6	1	36	14		
	9400	HUAN	20	GRF	1320.1	1325	48.5	5	4.1		0
	2800	OTTA	23	GRF	1320	1336	65	2.6			

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	127	TORN	7	C	1348.1	1348.6	1	306	68		
	113	PDTS	4	S/F	1350.1	1350.4	.5	350	200		
	7040	SAOP	45	C	1357	1357.9	9	8			15L
	536	ONDR	8	S	1357.3	1357.3	.4	150			
	3000	PDTS	3	S	1357.6	1357.9	1.2	9.3			
	1470	PDTS	3	S	1357.6	1358.1	1.2	7.5			
	9500	PDTS	1	S	1357.9	1358	.6	4.5			
	2800	OTTA	1	S	1357.9	1358	1	5.4	2.7		
	2800	OTTA	20	GRF	1505	1506	15	2.6	1.3		
	9400	HUAN	28	GRF	1734.4	1751.4	52.6	6.4	5.6		G
	7040	SAOP	45	C	1736.4	1739.5	22	12			15L
	2800	OTTA	1	S	1738.7	1740	2.5	2.2	1.4		
	2800	OTTA	1	S	1812	1812.5	1	2.2	1.1		
	7040	SAOP	1	S	1843.4	1844.4		6			11L
	9400	HUAN	28	GRF	2013.7	2024.7	15.6	4.2	2.8		R
	2695	PENT	21	GRF	2235	2255	135	11.2	5.6		
	2695	PENT	3	S	2243	2244	3	14	6		
	2695	PENT	1	S	2400.5	2401	1	3	1.5		
11	1415	MANI	8	S	0517.9	0519.2	1.7	171.6	57.2		
	606	MANI	4	S/F	0517.9	0518.6	2.2	49.6	10.5		
	2695	MANI	1	S	0518	0518.5	1.6	2.7	.9		
	4995	MANI	1	S	0518.7	0519.1	.7	42.4	14.1		
	6100	KISV			0520	0523.3		8			
	6100	KISV	45	C	0520	0524	5	17			
	1400	SYDN	47	GB	0522.1	0524.2	3.9				
	500	HIRA	46	C	0522.6	0523.7	3	300	50		SL
	950	GORK	4	S/F	0522.6	0524.5	6	29			
	700	SYDN	45	C	0522.6	0523.5	1.6				
	200	HIRA	46	C	0523	0523.2	2	2500	500		G
	2950	GORK	45	C	0523.1	0523.6	3.4	17	7		
	2950	GORK			0523.1	0524.4		15	7		
	650	GORK	45	C	0523.2	0523.9	6.3	65			
	650	GORK			0523.2	0523.3		27			
	100	HIRA	46	C	0523	0524	2	700	100		WL
	9100	GORK	20	GRF	0523	0524.5	9.5	10	5		
	700	SYDN	40	F	0526.7	0527.9	1.9				
	930	BORD	41	F	0645.4	0645.6	.6	33	2		
	930	BORD	8	S	0707	0707.2	.3	37	2		
	930	BORD	8	S	0741.2	0741.3	.2	47	1		
	536	ONDR	45	C	0808.2	0809.5	4	260	29		
	266	ONDR	42	SER	0809	1004.2	216	202			
	930	BORD	8	S	0817.4	0817.5	.1	48	1		
	536	ONDR	42	SER	0906	99		49			
	930	BORD	8	S	0919.4	0919.4	.1	45	1		
	9500	PDTS	8	S	0928.5	0928.9	.6	14			
	9100	ARCE	22	GRF	0944	1003.4	67				
	9100	GORK	21	GRF	0950.8	1002.6	26	4	2		
	202	IZMI	42	SER	1000.5	1005	11.5	650			
	127	TORN	42	SER	1002.3	1004.1	13.2	454			
	127	TORN			1002.3	1010.1		281			
	226	MARS	45	C	1003.3	1004.2	1.7	350	38		
	3000	PDTS	42	SER	1003.3	1004.4	8.7	18			
	9500	PDTS	42	SER	1003.5	1004.3	8.5	12			
	650	GORK			1003.5	1005					
	950	GORK	4	S/F	1003.6	1004.3	7.2	6			
	2950	GORK	1	S	1003.7	1004.3	1.8	13	6		
	1470	PDTS	42	SER	1003.8	1004.6	8.2	5.5			
	234	PDTS	42	SER	1003.3	1004.3	19	450	1	E	
	113	PDTS	42	SER	1003.3	1004.3	20	2000	20		
	10400	BERN	1		1003.8	1004.3	10	11			
	9100	GORK	1	S	1003.9	1004.3	1	15	7		
	930	BORD	3	S	1003	1004.2	3	18	3		
	808	ONDR	45	C	1003	1006.8	8	25	6		
	33	UPIC	42	SER	1004.3	1004.5	35.5				
	29	UPIC	42	SER	1004.5	1004.7	35.2				
	6100	KISV	8	S	1004	1004.3	1	15			
	930	BORD	41	F	1007	1007.9	4	32	5		
	2950	GORK	1	S	1009.3	1009.8	1	6.4	3		
	9100	GORK	1	S	1009.4	1009.8	1.5	10	5		
	6100	KISV	4	S/F	1009	1009.7	3	11			
	202	IZMI	7	C	1022.5	1023	1	600	250		
	127	TORN	8	S	1022.6	1023	1	498	59		
	127	TORN	45	C	1033.8	1035.1	2.8	25	7.3		
	202	IZMI	42	SER	1034	1039	5.5	100			
	930	BORD	41	F	1034	1135	2	22	2		
	127	TORN	45	C	1037.6	1038.8	1.8	120	32		
	9400	HUAN	1	S	1222.3	1224.7	3.4	9.9	4.7		R
	127	TORN	45	C	1229.3	1230.4	2.2	22	6.4		UNCERTAIN
	536	ONDR	4	S/F	1230.3	1230.8	1.5	72	13		
	9100	ARCE	21	GRF	1342.9	1402.1	148				
	2800	OTTA	21	GRF	1342		180	14.8			
	3000	PDTS	29	PBI	1342.5	1346.7	68 D	85			
	1470	PDTS	29	PBI	1342.5	1347.6	68 D	96			
	10400	BERN	28		1343	1403.4	73	27			

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					UT	UT	MINUTES	PEAK	MEAN		
	9[illegible]	BORO	3	S	1343	1346.3	9	36	18		
	864	ONDR	3	S	1343	1346.2	8	22	16		
	2650	DWIN	3	S	1343	1347	12	98	58		
	2800	OTTA	3	S	1343	1346.6	12	75	26.6		
	9500	PUTS	22	GRF	1344	1351.2	66 D	35			
	9400	HUAN	20	GRF	1344.6	1359.5	94.9	33	15.4		0
	9100	ARCE	1	S	1344.9	1345.6	3				
	9400	HUAN	3	S	1346.1	1347.3	2.5	24.3	17.8		6
	2800	OTTA	21	GRF	1634	1749	190	9.2	4.8		
	7000	SAOP	-5	C	1635.4	1636	8.6	11			
	2800	OTTA	-5	C	1635.9	1636	7	11	3.7		
	9400	HUAN	20	GRF	1637.5	1642.5	25.2	8.3	3.1		0
	10700	BERN	21		1655.6	1656.8	22	12			GPR
	2800	OTTA	240	R	2010	2025	15	4.8	2.4		
	2695	PENT	1	S	2250.8	2251.2	1.5	6	3		
	2695	PENT	21	GRF	2250	2253	90	5.4			
	2695	PENT	21	GRF	2332	2336	38	3	1.5		
	2695	PENT	3	S	2333.9	2334	1.1	10.6	5.3		
	2695	PENT	1	S	2337	2338	1.8	3.6	2.4		
12	3100	CRIM	3	S	0523.5	0524	3	28	8		
	260	ONDR	2	S/F	0651.7	0651.9	1	9			
	930	BORO	8	S	0703	0703.1	.2	76	2		
	930	BORO	8	S	0730	0730.1	.2	71	1		
	260	ONDR	4	S/F	0810.6	0811.3	1.5	29	3.7		
	33	UPIC	4	S/F	0811.1	0811.2	.6				
	202	IZMI	41	F	0811	0811	1	50			
	29	UPIC	2	S/F	0811	0811.1	.6				
	930	BORO	8	S	0823.6	0823.8	.1	55	1		
	260	ONDR	8	S	1012.3	1012.3	.3	76			
	536	ONDR	41	F	1120.7	1124.6	5	18			
	7000	SAOP	40	F	1221	1235					
	9400	HUAN	20	GRF	1757.7	1814.5	37.4	3.3	1.7		R
	2695	PENT	20	GRF	2305	2317	25	3.2			
13	930	BORO	8	S	0725	0725.1	.1	38	1		
	10400	BERN	43		0301.5	0304.1	6	14			
	9100	ARCE	-5	C	0801.7U	0802.2U	2.7U				
	9500	PUTS	29	PBI	0802.5	0803	17	19			
	3000	PUTS	3	S	0802.5	0804	5	7.5			
	3100	CRIM	1	S	0802.5	0805	6	11	4		
	9100	GORK			0802.9	0804.3		21			
	9100	GORK	-6	C	0802.9	0803.3	1.5	20			
	9100	KISV	-6	C	0802	0804	5	21			
	9100	GORK	29	PBI	0803.4	0805.4	30.5	12	6		
	2950	GORK	26	GRF	0803	0804.4	19.6	6.4	3		
	9100	ARCE	29	PBI	0804.4U		10.3U				
	260	ONDR	8	S	0837.6	0837.8	.3	24			
	9400	HUAN	1	S	1301.1	1301.7	1.2	4.1	3.3		R
	7000	SAOP	-5	C	1303.4	1312.1	22	57			17R
	10400	BERN	1		1309	1312.2	29	30			
	9100	ARCE	3	S	1309.7	1311.3	3.5				
	9400	HUAN	3	S	1310.2	1312.2	5.5	34.6	15.7		R
	2800	OTTA	2	S/F	1310.9	1315.9	5	7.2	5		
	9100	KISV	4	S/F	1310	1312.3	2.3D	20			
	10715	DWIN			1310	1312	20	15	10		
	2800	OTTA	27A	RF	1310		170	4.4	3.8		
	2800	OTTA	24	R	1310	1316	6	4.4			
	3000	PUTS	3	S	1311	1312.4	5	11			
	9500	PUTS	29	PBI	1311.5	1312	19	25			
	1470	PUTS	1	S	1312	1312.4	1.5	3.4			
	9100	ARCE	29	PBI	1313.2		17				
	9400	HUAN	29	PBI	1315.7	1315.7	43.1	9.9	4.8		R
	2800	OTTA	24R	R	1316		124	4.4			
	7000	SAOP	20	GRF	1454.2	1455.5		8			0
	2800	OTTA	1	S	1454	1455.5	3	8.6	4.3		
	2800	OTTA	29	PBI	1457	1457	20	3.6	1.8		
	2800	OTTA	26	FAL	1520	1600	40	-4.4	-2.4		
	2800	OTTA	21	GRF	1955	1955	35	3	1.5		
	9400	HUAN	1	S	1933.1	1934.5	2.2	8.3	3.9		0
	9400	HUAN	1	S	2008.3	2008.9	1.7	9.9	6.8		R
	2695	PENT	3	S	2009	2009	2	11.8	3		
	2800	OTTA	240AR		2040	2056	16	4.8			
	2800	OTTA	4	S/F	2049.5	2050.7	6	14.4	7		
	2800	OTTA	20	GRF	2125	2143	45	4.8	2.4		
14	17000	NOBE	7	C	0325	0327.2	2.8	75			R
	35000	NAGO	5	S	0326	0327	6	24			
	17700	NOBE	29	PBI	0327.8	0327.8	23.6	23			0
	2950	GORK	1	S	0429.5	0430	3	9.8	5		
	2950	GORK	1	S	0445.7	0446.7	3.8	6.9	3.5		
	29	UPIC	43	NS	0607.9	0720.5	380				
	33	UPIC	43	NS	0606.1	0720	380				
	260	ONDR	44	NS	0710 E		417 D	47	3		
	127	TORN	44	NS	0730 E	1330.5	480 D	13700	202		V1

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	1470	POTS	46 C	0926	0926.2	204	119			
	127	TORN	47 GB	0926.1	0926.8	5	1700	1050		
	930	BORD	45 C	0926	0929	26	86	30		
	202	IZMI	48 C	0930 U	0942	26	5000	1400		
	930	BORD	45 C	1006	1024.4	29	265	23		
	606	ONDR	45 C	1021.6	1024.2	8	76	42		
	202	IZMI	45 C	1044	1052	16	550	300		
	606	ONDR	46 C	1046.5	1051.6	13	35	60		
	930	BORD	45 C	1046	1052	14	219	52		
	10400	BERN	3	1305	1306.9	3	24			
	9500	POTS	3 S	1306	1307	2	23			
	9100	ARCE	3 S	1306.4	1307.1	1.5				
	9400	HUAN	20 GRF	1316.8	1323.7	37.5	5	2.6		0
	2800	OTTA	22 GRF	1318	1333	35	2.2	1		
	2800	OTTA		1418.5E	1418.9	.50	8.8			
	7000	SAOP	45 C	1426.5	1429.1		7			0
	2800	OTTA	24 R	1429	1431	2	3.6	1.9		
	2800	OTTA	27A RF	1429		126	3.6	3.4		
	3000	POTS	3 S	1431.5	1433.6	3.5	9			
	2800	OTTA	2 S/F	1431.5	1434	4.5	9.2	4.4		
	2800	OTTA	24P R	1431		99	3.8			
	1470	POTS	1 S	1433	1434	2	3.5			
	930	BORD	41 F	1445.5	1445.9	.5	22	2		
	930	BORD	8 S	1453.6	1453.6	.1	22	1		
	9400	HUAN	20 GRF	1500.3	1505.8	13.7	6.7	1.7		0
	2800	OTTA	40 F	1530	1533.3	3.5	8.7			
	2800	OTTA	26 FAL	1610	1635	25	-3.8	-1.9		
	2800	OTTA	21 GRF	1655	1720	135	9.4	4.6		
	2800	OTTA	4 S/F	1700	1701.8	6	44.8	11		
	9400	HUAN	20 GRF	1706.4	1726.3	41.2	7.6	3.5		0
	2800	OTTA	21 GRF	1930	2000	85	6.6	3.3		
	4995	BOUL	4 SF	1932.5	1936	8.5	21	7		
	7000	SAOP	45 C	1933	1936.2	20	42			BR
	9400	HUAN	3 S	1933	1935.8	5.3	26.9	17.3		R
	2600	OTTA	3 S	1934.5	1936.3	6	11.4	5.7		
	9400	HUAN	29 PBI	1938.3	1938.3	40.7	20.2	8.3		R
	2800	OTTA	2 S/F	2036	2039.6	5	8.4			
	9400	HUAN	1 S	2037.8	2039.7	2.8	6.7	3.6		0
	2800	OTTA	32 ABS	2100	2130	75	-4.4	-2.2		
	4995	BOUL	3 S	2148	2148.5	1.5	27	9		
	2695	PENT	240 R	2240	2305	25	6	3		
	2695	PENT	22 GRF	2316	2319	18	3.4	1.5		
15	2695	PENT	1 S	0045	0045.7	1	3.2	1.6		
	2695	PENT	1 S	0112.5	0113.5	1.5	6.8			
	9100	GORK	22 GRF	0445.6	0447.7	7.9	7	3.5		
	6100	KISV	21 GRF	0550.8	0551	10	4			
	260	ONDR	44 NS	0652 E		433 D	40	2		
	127	TORN	43 NS	0900 U	0957.6	400	526	3.7		V1,DISTURBED
	9100	ARCE	21 GRF	0915.1	0925.3	41.5				
	10400	BERN	3	0922	0924.6	22	11			
	6100	KISV	4 S/F	0922	0925	11	4			
	9100	GORK	20 GRF	0923	0925.2	9	15	7		
	9100	ARCE	8 S	0926.2	0926.4	.8				
	1470	POTS	29 PBI	1012	1027.3	54	63			
	10400	BERN	4	1013	1027.4	32	80			
	536	ONDR	41 F	1016.5	1027.1	44	34	5		
	3000	POTS	29 PBI	1017	1027	43	104			
	930	BORD	46 C	1017	1027	19	45	10		
	127	TORN	48 C	1019.4	1026.1	6.6	229	40		
	9500	POTS	29 PBI	1020	1027.5	39	92			
	29	UPIC	48 C	1020.9	1022.6	10.7				
	3100	CRIM	47 GB	1020	1026 U	12	15 D			
	6100	KISV	46 C	1020	1026.5	30	81			
	3100	CRIM		1020	1032	152 D	7			
	9100	ARCE	4 S/F	1021.2	1027.5	14.2				
	33	UPIC	48 C	1021.3	1021.7	10				
	202	IZMI	41 F	1021.8	1029	10.2	50			
	606	ONDR	20 GRF	1023	1026.7	23	20	13		
	15000	KISV	46 C	1025	1027.7	9	38			
	10715	DWIN	45 C	1025	1027	10	70	50		
	2650	DWIN	45 C	1025	1027	10	130	70		
	113	POTS	4 S/F	1025.1	1025.4	2.2	280	20		
	9100	ARCE	30 PBI	1035.4		55				
	9100	ARCE	8 S	1036.1	1036.2	.5				
	7000	SAOP	45 C	1241.8	1253.4	16	13			9L
	113	POTS	25	1300	1-18	90 D	57			
	9400	HUAN	20 GRF	1614	1645.3	44.6	5.1	1.8		0
	9400	HUAN	20 GRF	1932.2	1955	46	6.8	2.7		G
	9400	HUAN	3 S	2004.2	2005	1.2	10.2	6.1		R
	200	HIRA	44 NS	2025 E	2150	730 D	25	5		NL
	9400	HUAN	3 S	2145.2	2145.7	4.2	17.1	6		0
	2600	OTTA	1 S	2145.4	2145.5	1	2	1		
16	5730	IRKU	45 C	0103.5	0103.3	13	9			L

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16	9730	IRKU		0103.5	0110.9		48 D			L
	9730	IRKU		0103.5	0106.8		48 D			L
	9730	IRKU		0103.5	0116.3		14			L
	9730	IRKU		0103.5	0106.8		15			L
	9730	IRKU		0103.5	0112.4		48 D			L
	9730	IRKU		0103.5	0109.5		48 D			L
	17000	NOBE	28 PPE	0104.2	0108	3.8	19			B
	2695	PENT	4 S/F	0107	0106.9	5	192	44.4		
	1415	MANI	3 S	0108	0109.7	7	15.6	5.2		
	17000	NOBE	47 GB	0108	0109.5	6.4	723			B
	3000	MANI	47 GB	0108	0109.5	7	1355.5	451.8		
	4993	MANI	4 S/F	0108	0109.3	7	281.2	97.1		
	2695	MANI	3 S	0108	0109.3	7	93.9	31.3		
	606	MANI	1 S	0109.2	0109.5	3.5	3.4	1.1		
	35000	NAGO	5 S	0109	0110	6	310			
	17000	NOBE	29 PBI	0114.4	0114.4	37	37			B
	35000	NAGO	29 PBI	0115	0122	45	28			
	9731	IRKU	29 PBI	0117		35	10			L
	6100	KISV	4 S/F	0559	0600.5	6	8			
	200	ONSA	44 NS	0640 E		441 D	26	2		
	127	TURN	43 NS	1050	1319.8	230	27	.7		V1
	3115	CRIM	28 GRF	0645	0652	23	7	2		
	10400	BERN	1	0647.2	0648.1	3	7			
	9100	GORK	1 S	0647.5	0648	1.2	6	3		
	950	BORO	6 S	0707.6	0707.8	.1	21	1		
	9140	ARCE	21 GRF	0721.6	0619	48				
	950	BORO	8 S	0741	0741	.1	28	1		
	6100	KISV		0750	0802.8		75			
	6100	KISV	45 C	0750	0802.8	38	98			
	9120	GORK	21 GRF	0753.3	0809.3	54.7	29	14		
	10400	BERN	4	0756	0801.6	56	120			
	1415	MANI	4 S/F	0759.6	0800.8	4.4	32.9	10.9		
	4993	MANI	4 S/F	0800.9	0802	2.4	67	22.2		
	9736	IRKU		0803 U	0802	16	48 D			L
	9731	IRKU	45 C	0800	0809.1		32			L
	9500	POTS	29 PBI	0801	0801.5	48	121			
	3000	POTS	29 PBI	0801	0803	44	27			
	3115	CRIM	3 S	0801	0802.5	9	35	11		
	10715	DWIN	45 C	0801	0801	60	60	15		
	9100	GORK	46 C	0801	0801.9	8	150			
	2695	DWIN	1 S	0801	0802	15	15	10		
	9100	GORK		0801	0803.9		60			
	2950	GORK	21 GPF	0801.1	0807.6	48	10			
	9100	ARCE	4 S/F	0801.3	0801.7	15.3				
	2950	GORK	3 S	0802	0802.6	4.7	18	9		
	3115	CRIM	29 PBI	0810	0810	30	7	2		
	950	BORO	4 S	0811.7	0811.7	.2	21	1		
	950	BORO	3 S	0851.7	0851.7	.2	32	1		
	10400	BERN	46	0915	0937.1	78	655			
	6100	KISV		0920	0942		260			
	6100	KISV	46 C	0920	0937	38	370			
	6100	KISV		0920	0942.7		150			
	9100	ARCE		0930.9	0937.2	9.6				
	9100	ARCE	46 C	0930.9	0937.2	21.6				
	9500	POTS	45 C	0931	0937.2	66	720			
	9100	GORK		0931.3	0941.6		800			
	9100	GORK	46 C	0931.3	0938.9	16.7	1100			
	10715	DWIN	45 C	0934		60	270 D			
	3100	CRIM		0934	0938		222			
	15000	KISV		0934	0937		530			
	3100	CRIM	47 GB	0934	0937.5	27	222	70		
	15000	KISV	46 C	0934	0942	38	700			
	15000	KISV		0934	0942.8		560			
	3000	POTS	45 C	0935	0938.3	68	184			
	2620	DWIN	45 C	0935	0935	30	145	48		
	2950	GORK	46 C	0935.1	0938.7	11.2	176			
	2951	GORK		0935.1	0943		94			
	2695	MANI	4 S/F	0935.3	0936.8	5.3	123.7	41.2		
	4993	MANI	4 S/F	0935.3	0938.8	4.7	333.6	111.2		
	1470	POTS	4 S/F	0938 E	0940.7	7 D	18			
	35	UPIC	32 ABS	0939.3	0943.3	32.10				
	950	GORK	20 GRF	0939	0940.6	3	4			
	620	GORK	40 F	0939	0940.5	4	7			
	650	GORK		0939	0942		1.5			
	9140	ARCE		0940.4	0942.1	12				
	29	UPIC	32 ABS	0940 U	0943	16 U				
	2950	GORK	29 PBI	0940.3	0940.4	24.6	37			
	9100	GORK	29 PBI	0940	0946	43 D	85			
	9140	ARCE	29 PBI	0952.4		43				
	3100	CRIM	29 PBI	1001	1001		20			
	10400	BERN	3	1110.2	1111.9	4	11			
	9100	ARCE	1 S	1111.7	1112.1	1				
	9100	ARCE	29 PBI	1112.7		16				
	9400	HUAN	20 GRF	1134.2	1141	14.8	9.7	2.3		B
	9400	HUAN	20 GRF	1227.7	1307.1	92.5	4.9	1.9		L

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	10400	BERN	41		1230.6	1232.9	53	15			
	9100	ARCE	1	S	1232.6	1233	7.5				
	9100	ARCE	20	GRF	1248.2	1307.5	33.7				
	7000	SAOP	45	C	1253	1307.3	16.6	13			19L
	113	PDTS	4	S/F	1341.5	1341.8	.4	100	3		
	7000	SAOP	45	C	1430	1438.4	16	11			18L
	7000	SAOP	41	F	1430						3 BURSTS
	9400	HUAN	20	GRF	1430.6	1543.6	104.2	16.2	7.7		L
	10400	BERN	27		1431	1438.2	25	9			
	7000	SAOP	20	GRF	1456			12			19L
	10400	BERN	27		1457.6	1459.4	9	11			
	7000	SAOP	45	C	1540	1555	37	26			20L
	10400	BERN	27		1540.2	1555.8	35	11			
	2800	OTTA	20	GRF	1545	1600	50	6.6	3		
	2800	OTTA	20	GRF	1652	1656	11	1.6			
	7000	SAOP	45	C	1711.6	1718.2	17.2	15			20L
	7000	SAOP	27	RF	1742		12.5	7			19L
	9400	HUAN	20	GRF	1742.1	1752.5	23	11.4	4.4		L
	7000	SAOP	27	RF	1803.7		29.3	8			16L
	9400	HUAN	20	GRF	1811.7	1820.8	18.7	4.9	3.4		L
	9400	HUAN	20	GRF	1845.8	1902.6	34.2	16.2	5.1		D
	9400	HUAN	20	GRF	1928	1955.5	115.1	30.8	13.6		L
	7000	SAOP	45	C	1944.2	1951.9		64			3L
	9400	HUAN	3	S	1950.6	1951.4	4.1	64.9	34.9		L
	2800	OTTA	21	GRF	1950	2045	120	5.8	3.6		
	2800	OTTA	3	S	1951	1952.8	6	64	29.9		
	2800	OTTA	29	PBI	1957	1957	25	8	4		
	9400	HUAN	3	S	2041.9	2043.8	3	17.8	10		L
	9400	HUAN	20	GRF	2130.8	2137.8	29	9.7	4.7		L
	9400	HUAN	1	S	2211.7	2215.2	6.8	8.1	4.4		D
	2695	PENT	20	GRF	2220	2250	50	3	1.5		
	2695	PENT	20	GRF	2330	2417	70	6.8	2.3		
	17000	NOBE	1	S	2350.5	2351.4	2.4	27			L
17	9100	GORK	22	GRF	0421.7	0429	7.7	11	5		
	2950	GORK	20	GRF	0509.5	0515	52	8.3	4		
	9100	GORK	20	GRF	0512.5	0529.5	33.5	14	7		
	930	BORD	8	S	0702	0702.1	.1	16	1		
	6100	KISV	3	S	0715	0720	15	6			
	9100	ARCE	20	GRF	0717.4	0722.4	19				
	9100	GORK	20	GRF	0717	0722.2	13.7	11	5		
	930	BORD	8	S	0731.6	0731.6	.1	22	1		
	260	ONDR	44	NS	0740 E		330 D	29			
	930	BORD	8	S	0807.7	0807.7	.1	16	1		
	6100	KISV	1	S	0842	0843.5	3	3			
	9100	GORK	21	GRF	0920.2	0936.6	30.8	9	4.5		
	6100	KISV	4	S/F	0925	0934	35	16			
	10400	BERN	45		0925.7	0932.1	27	22			
	9100	ARCE	21	GRF	0927.8	0934.1	23				
	9100	GORK			0931.3	0933.7		15			
	9100	GORK	45	C	0931.3	0932	5.2	21			
	9500	PDTS	4	S/F	0931.5	0932	5.5	20			
	15000	KISV	6	S	0931.5	0932	1	25			
	9100	ARCE	1	S	0931.8	0932.2	1.4				
	10715	DWIN	8	S	0932	0932.5	1	20	10		
	10400	BERN	21		1034.5	1036.2	42	12			
	9100	GORK	1	S	1035.7	1036.2	1.7	11	5		
	650	GORK			1035.7	1037.7		2.5			
	650	GORK	40	F	1035.7	1036.8	3.3	2.5			
	9100	ARCE	22	GRF	1035	1040.4	39				
	3100	CRIM	3	S	1035	1037	14	13	4		
	9100	GORK	21	GRF	1035	1044.7	42	12	6		
	2950	GORK	20	GRF	1035	1036.9	35	11	5		
	950	GORK	1	S	1037.5	1037.6	.2	6	3		
	3100	CRIM	29	PBI	1049	1049	112	5			
	9400	HUAN	3	S	1124.4	1126.3	10.7	17.1	10.2		D
	7000	SAOP	20	GRF	1156.5			7			16L
	10400	BERN	1		1227.8	1228.2	2	10			
	9100	ARCE	1	S	1228.2	1228.5	1.2				
	2800	OTTA	20	GRF	1345	1400	40	2.4			
	2800	OTTA	22	GRF	1515	1610	115	5.2	3		
	9400	HUAN	20	GRF	1517.4	1530	36.7	10.2	3.8		L
	9100	ARCE	1	S	1528.8	1530.3	7.5				
	7000	SAOP	41	F	1554.5						2 BURSTS
	7000	SAOP	45	C	1554.5	1606.2	29.4	19			32L
	7000	SAOP	45	C	1643.3	1647.7	30	14			D
	9400	HUAN	20	GRF	1718.6	1726	72.4	8.5	6.3		L
	2800	OTTA	27	RF	1720		155	4	3.4		
	2800	OTTA	24	R	1720	1735	15	4	2		
	2800	OTTA	24P	R	1735		110	4			
	9400	HUAN	3	S	1815.3	1816.5	4.5	23.9	14.8		L
	9400	HUAN	20	GRF	1831	1904.7	55.6	10.2	6.1		L
	2800	OTTA	26	FAL	1925	1955	30	4	2		
	2800	OTTA	1	S	2049.7	2050	1	2.8	1.4		
	2800	OTTA	8	S	2202.5	2202.8	.5	2	1		

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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
17	9100	GORK	20 GRF	0609.4	0620.2	23.6	8	4		
	10400	BERN	47	0650	0737.6	146	2280			CPR
	6100	KISV		0650	0659.5		370			
	6100	KISV		0650	0658.2		260			
	6100	KISV		0650	0727		270			
	6100	KISV	47 GB	0650	0737.5	380	1350			
	6100	KISV		0650	0702.7		120			
	6100	KISV		0650	0658.8		350			
	6100	KISV		0650	0721.5		260			
	6100	KISV		0650	0700.5		360			
	6100	KISV		0650	0815.5		240			
	6100	KISV		0650	0709		180			
	6100	KISV		0650	0744.7		1550			
	6100	KISV		0650	0700.2		360			
	6100	KISV		0650	0815.5		240			
	6100	KISV		0650	0704.5		90			
	6100	KISV		0650	0700.7		350			
	6100	KISV		0650	0711.7		70			
	9100	GORK		0653.3	0721.6		370			
	9100	GORK	47 GB	0653.3	0700.4	325 D	380			
	2950	GORK		0653.3	0813.4		270			
	9100	GORK		0653.3	0745		4060			
	2950	GORK		0653.3	0735		1650			
	9100	GORK		0653.3	0736		4300			
	2950	GORK	47 GB	0653.3	0700.3	300	540			
	9100	GORK		0653.3	0815.6		480			
	2950	GORK		0653.3	0744.6		2590			
	9100	ARCE	29 PRZ	0653.6	0700.6	29.8				
	4995	MANI	47 GB	0653.7	0744.7	98.2	4288.7	1429.6		
	3000	POTS	47 GB	0654	0746	139	1600 D			
	2695	MANI	47 GB	0655	0745.5	96.3	4089.3	1363.1		
	950	GORK		0655.7	1024.4		162			
	950	GORK		0655.7	0747.6		214			
	950	GORK		0655.7	1052		134			
	950	GORK	46 C	0655.7	0703.1	304	91			
	950	GORK		0655.7	0822.2		154			
	2650	OWIN	49 GB	0655		175	140 D			
	3800	MANI	47 GB	0656	0736	97.7	3060	1020		
	1470	POTS	47 GB	0656	0750.8	147	1090			
	1415	MANI	47 GB	0656.3	0747.6	163.7	928.5	309.5		
	9500	POTS	47 GB	0656.5	0737.6	337	2600			
	10715	OWIN	49 GB	0656		120	260 D			
	3100	CRIM	47 GB	0656 E	0712	256 U	456			
	3100	CRIM		0656 E	0823 U		600 D			
	3100	CRIM		0656 E	0743 U		600 D			
	3100	CRIM		0656 E	0930	17	60	20		
	650	GORK		0657.2	0819		1490			
	650	GORK	47 GB	0657.2	0703	321 D	61			
	650	GORK		0657.2	1054.1		620			
	650	GORK		0657.2	0745.7		57			
	650	GORK		0657.2	1026		556			
	930	BORO		0657	0657.3		164			
	430	BORO	45 C	0657	0800	140	255	75		
	500	MIRA	43 C	0658.6	0703.5	73	60	25		WR
	234	POTS	47 GB	0659	0929	431 D	730			
	113	POTS	47 GB	0659	0926	431 D	2500			
	600	MANI	47 GB	0659.2	0907	133.1	567	189		
	200	MIRA		0659.5	0732		80			WL
	200	MIRA	43 C	0659.5	0742	105 D	7000	50 U		WR
	202	IZMI	47 GB	0700	0703	6	3300	1000		
	100	MIRA	48 C	0700	0702.8	63	6000	200		WL
	234	POTS	4 S/F	0700.9	0702.3	2.4	175	6		
	33	UPIC	48 C	0707.2	0720	51.9				
	29	UPIC	48 C	0707.5	0720.5	51				
	536	ONDR	49 GB	0710 E	0907	270 D	273	50		
	536	ONDR		0710 E	0926		162			
	536	ONDR		0710 E	0816.3		182			
	536	ONDR		0710 E	1054		52			
	113	POTS	4 S/F	0719.8	0719.9	1.1	4200	350		
	17000	NOBE	47 GB	0720.5	0737.7	36 D	2604			L,SUNSET
	365	ONDR		0720	0823.6		186			
	365	ONDR	43 C	0720	0747.6	126	111	69		
	30E	ONDR		0720	0856.8		90			
	15000	KISV		0722	0824		500			
	15000	KISV	47 GB	0722	0736	73	1300			
	9100	ARCE	47 GB	0723.4	0735.3	51				
	202	IZMI	21 GRF	0726.5	0728.5	23.5	250	100		
	35000	NAGO	5 S	0728	0739	48 D	857			SUNSET
	113	POTS	4 S/F	0746.2	0746.7	2	2300	150		
	9100	ARCE	30 PBI	0814.4		175				
	500	MIRA	43 C	0815.5	0816.7	25 D	180 U	60 U		WL,WR,SUNSET
	9100	ARCE	40 F	0815	0821.6	13				
	202	IZMI	25 R	0830	1025	270	250			
	200	ONDR	49 GB	0830		160	202 D	57		
	3000	POTS	29 PBI	0926	0930.4	162	32			

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	200	MIRA	+3	NS	2250	2400	235 D	40	5		NL
18	1400	SYDN	20	S	0022.7	0023.6	2.7				
	2695	PENT	1	S	0023	0024	2.5	5	2.5		
	760	SYDN	4	S	0125.3	0125.7	.9				
	2695	PENT	4	S/F	0125.5	0126	1.5	12.9	6.4		
	5730	IRKU	1	S	0125	0125.9	4	5			L
	6100	KISV	4	S/F	0618	0619.5	6	4			
	200	ONDR	+4	NS	0630 E		453 D	29			
	9100	GORK	20	GRF	0651.2	0656.2	18.7	7	3.6		
	9100	ARCE	22	GRF	0723.2	0819.8	137				
	3000	POTS	20	GRF	0742	0819.4	98	16			
	9500	POTS	20	GRF	0746	0818.7	94	26			
	10400	BERN	20		0746.5	0818.7	86	23			
	3100	CRIM	21	GRF	0749	0850	97	8	3		
	2950	GORK	20	GRF	0754.3	0819.4	7.5	6	4		
	9100	GORK	21	GRF	0754	0801.7	102	27	15		
	9100	GORK	1	S	0816.7	0819.6	7.2	17	8		
	3100	CRIM			0816	0820		6			
	3100	CRIM	+5	C	0816	0817	7	5	2		
	6100	KISV	4	S/F	0817	0819.5	13	14			
	127	TORN	7	C	1025.1	1026.6	2	5	2.2		
	33	UPIC	+2	SER	1145.1	1150.1	5.5				
	29	UPIC	+2	SER	1145.1	1150.5	5.6				
	9400	HUAN	20	GRF	1222	1234.5	21.8	10.3	3.9		L
	7000	SAOP	+5	C	1247	1253.7	26	29			10L
	9400	HUAN	3	S	1248.2	1254.1	10.3	15.4	8.4		L
	10400	BERN	3		1251.5	1253.6	3	14			
	9100	ARCE	3	S	1251.8	1253.7	8.3				
	9500	POTS	3	S	1252	1252.5	3	3			
	9400	HUAN	20	GRF	1400.2	1447.8	103.6	29.1	8		L
	2800	OTTA	21	GRF	1420	1445	110 D	13.6			
	7000	SAOP	+6	C	1432	1438.2	65.2	147			14L
	10400	BERN	46		1432.2	1438.2	115	55			
	9400	HUAN	3	S	1432.3	1437.5	14.9	78.3	35		L
	9100	ARCE	28	PRE	1432.7	1433.3	3.8				
	3000	POTS	29	PBI	1436	1438.4	14 D	33			
	2650	DWIN	1	S	1436	1438	6	30	20		
	2800	OTTA	3	S	1436	1438	6	24.6	9		
	10715	DWIN	1	S	1436	1438	6	30	20		
	9500	POTS	29	PBI	1436.5	1438.5	14 D	50			
	9100	ARCE	3	S	1436.5	1438.6	4.9				
	9100	ARCE	29	PBI	1441.4	1444.4	49				
	4995	BOUL	3	S	1532.5	1534	2.5	14	5		
	2800	OTTA	21	GRF	1730	1730	50	4	2		
	9400	HUAN	20	GRF	1743.1	1755.7	35.6	13.7	6.2		8
	7000	SAOP	2	S/F	1755	1755.8		8			8
	2300	OTTA	1	S	1755	1755.6	1	8.4	2.1		
	9400	HUAN	20	GRF	1825.9	1845	43	5.1	4.8		8
	7000	SAOP	+6	C	1918	1923.4	32	68			21L
	9400	HUAN	20	GRF	1918.5	1927.9	50.5	27.4	9.8		L
	4995	BOUL	4	SF	1918	1922.5	27	48	16		
	2800	OTTA	20	GRF	1920	1953	90	6.2	3.1		
	2800	OTTA	20	GRF	2120	2135	40	3.6	2		
	9400	HUAN	20	GRF	2152.6	2200	12.2	8.6	5.8		8
	2695	PENT	20	GRF	2220	2235	45	3.8	2		
19	17000	NOBE	1	S	0309.6	0310	.8	19			8
	9100	GORK	21	GRF	0357	0415.3	63	29	15		
	5730	IRKU			0400	0403.2		29			L
	5730	IRKU	+1	SER	0400	0402.3	12	32			L
	5730	IRKU			0400	0406.8		36			L
	17000	NOBE	7	C	0402.2	0402.4	5.3	67			8
	9100	GORK	+6	C	0402.4	0403.3	6.5	55			
	9100	GORK			0402.4	0407		70			
	35000	NAGO	20	GRF	0403	0409	97	19			
	2950	GORK	21	GRF	0406 E	0415.3	76 D	13	6.5		
	17000	NOBE	29	PBI	0407.5	0407.5	48	17			8
	5730	IRKU	2	S	0413.7	0414.1	5	66			L
	2950	GORK	3	S	0414	0414.3	1.9	33	16		
	9100	GORK	3	S	0414.1	0414.4	1.2	40	20		
	15000	KISV	+5	C	0644	0650 U	14	132 D			
	10400	BERN	47		0644.5	0646.1	16	415			
	9100	GORK			0644.7	0649.8		185			
	9100	GORK	+6	C	0644.7	0646.5	76	500			
	9500	POTS	4	S/F	0645	0646	11	348			
	35000	NAGO	5	S	0645	0647	7	68			
	3100	CRIM	3	S	0645	0646	7	72	24		
	930	BORD	+6	C	0645	0645.4	8	35	5		
	6100	KISV			0645	0650		52			
	5730	IRKU			0645	0649.9		41			R
	6100	KISV	+5	C	0645	0646	6	219			
	5730	IRKU	+5	C	0645	0646	15	102 D			R
	6100	KISV			0645	0650.7		61			
	5730	IRKU			0645	0650.7		43			R

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19	17000	NOBE	45	C	0645.1	0649.9	14	585			R
	950	GORK	45	C	0645.1	0646.4	10	15			
	950	GORK			0645.1	0649.5		19			
	9100	ARCE			0645.3	0646.2	3.4				
	650	GORK	45	C	0645.3	0646.8	10.5	40			
	650	GORK			0645.3	0650		30			
	2950	GORK	4	S/F	0645.8	0646.6	5.5	91			
	4995	MANI	3	S	0646	0647.5	6.7	126.6	42.2		
	9100	ARCE	46	C	0646.2	0646.2	16.90				
	8800	MANI	3	S	0646.5	0647.6	7.7	252.9	84.3		
	2695	MANI	3	S	0647.2	0647.7	1.8	49.4	16.5		
	9100	ARCE			0648.7	0649.8	13.5				
	260	JNOR	44	NS	0650 E		441 D	30			
	6100	KISV	29	PBI	0651.3	0651.3	50	37			
	2950	GORK	29	PBI	0651	0651	130	19			
	35000	NAGO	29	PBI	0652	0702	60 D	23			
	9100	GORK	30	PBI	0652.3	0652.5	340 D	48			
	10400	BERN	4		0704.5	0709.2	31	35			
	9100	ARCE	4	S/F	0706.6	0709.5	3.7				
	3100	CPIM	1	S	0706	0709	5	18	6		
	9100	GORK	45	C	0706	0706.4	6.2	50			
	5735	IPKU	2	S	0706	0708.9	10	61	24		R
	9100	GORK			0706	0709.3		57			
	6100	KISV	4	S/F	0707	0709	3	83			
	15300	KISV	3	S	0707	0709.5	4	28			
	9500	PUTS	29	PBI	0707.5	0709	158	45			
	3000	PUTS	29	PBI	0707.5	0708.6	163	24			
	6100	KISV	29	PBI	0710	0710	65	37			
	9100	ARCE	29	PBI	0710.3		19				
	10400	BERN	21		0750	1219.9	327	46			
	9100	ARCE	1	S	0850.2	0851.4	2				
	9100	ARCE	1	S	0927.7	0927.8	.8				
	9500	PUTS	21	GRF	1155	1219	77	25			
	3000	PUTS	22	GRF	1200	1214.8	108	13			
	9400	HUAN	20	GRF	1200	1221.8	44	13	8		0
	2300	OTTA	21	GRF	1205	1230	95	7.8	3.7		
	9400	HUAN	3	S	1207.7	1208.8	2	11.4	7.5		0
	9100	ARCE	21	GRF	1208.6	1223.4	36				CHART DISTURBED
	1470	PUTS	22	GRF	1209	1214.5	51	3.9			
	2600	OTTA	45	C	1211	1214.8	7	5.2	2.5		
	2950	GORK	20	GRF	1211.7	1215	24 D	6.2	3.1		
	9400	HUAN	1	S	1213.6	1214.4	1.4	6.5	4.2		R
	9100	GORK	1	S	1218.6	1219.1	2.3	12			
	9400	HUAN	3	S	1219.5	1219.6	1.6	14.6	12.2		0
	9100	ARCE	1	S	1218.8	1219.4	2.8				
	9400	HUAN	28	PRE	1348.2	1355.1	6.9	3.2	3		L
	7020	SAOP	46	C	1348.6	1357.6	32	265			SL
	9500	PUTS	21	GRF	1350	1411.1	78 D	40			
	10400	BERN	46		1355	1357.6	96	172			
	10400	BERN	46		1355	1420.4	96	78			
	2650	DWIN	41	F	1355	1358	38	55	20		
	10715	DWIN	41	F	1355	1359	38	140	38		
	9400	HUAN	45	C	1355.1	1357.5	8	230.6	81.4		L
	9100	ARCE			1355.3	1357.8	3.3				
	9100	ARCE	46	C	1355.3	1357.8	5				
	3000	PUTS	21	GRF	1356	1412.5	66	18			
	2800	OTTA			1356	1420.5	29	54.6			
	1470	PUTS	22	GRF	1357	1416.5	64	8.9			
	9500	PUTS	4	S/F	1355	1357.5	12	179			
	3000	PUTS	4	S/F	1356.5	1359.6	6.5	52			
	9100	ARCE			1358.6	1359.1	1.7				
	9100	ARCE	30	PBI	1400.3		34.5				
	9400	HUAN	29	PBI	1403.1	1403.1	63.2	39	21.3		L
	9400	HUAN	3	S	1405.3	1406.5	1.7	16.2	6.5		0
	96	JORD	41	F	1410	1411.7	2.5	177	4		
	3000	PUTS	4	S/F	1417	1426.2	7	52			
	9400	HUAN	3	S	1417.1	1420.1	6	67.7	41.6		0
	9100	ARCE	3	S	1417.7	1420.5	6.8				
	9500	PUTS	2	S/F	1418	1420.1	7	93			
	2300	OTTA	29	PBI	1425	1429	98	14	7		
	10400	BERN	3		1538.1	1602.5	26	14			OPR
	7000	SAOP	45	C	1559	1602.2	13	16			0
	2800	OTTA	240	P	1600	1601.2	1.2	3	1		
	9100	ARCE	1	S	1601.2	1602.6	9.4				
	2800	OTTA	22	GRF	1618	1651	63	3			
	7000	SAOP	20	GRF	1738		26	15			0
	1420	BOUL	3	S	1738 E	1738.5	1.50	6 U	2		
	2800	OTTA	240	P	1741	1742.2	1.2	4.4	2.2		
	2594	OTTA	29	GRF	1826	1830.5	34	28	6.7		
	9400	HUAN	48	F	1956.4E	2101.6	206.30	76.5	26.5		0
	2800	OTTA	21	GRF	1910	1930	60	5.2			
	7000	SAOP	45	C	1911	1921.1	36	56			ER
	2800	OTTA	4	S/F	1916	1916	11	12.2	6.1		
	2800	OTTA	22	GRF	1935.9	1936.3	10	7.8	3.7		
	2800	OTTA	21	GRF	2015	2045	73	11.6	5.8		

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	2800	OTTA	1	S	2019.5	2020.5	2	4.4	2.2		
	2800	OTTA	8	S	2033	2033.2	.6	3	1.5		
	2800	OTTA	1	S	2034	2036.3	6	7.4	2.6		
	1420	BOUL	3	S	2038 E	2038.5	1.50	6 U	3		
	17000	NOBE	8	S	2215.1	2215.6	.7	105			R
	9400	HUAN	8	S	2215.1	2215.4	1	179	51.8		R
	17000	NOBE	29	PBI	2215.6	2216.9	5	18			0
	17000	NOBE	28	PKE	2235.6	2301.5	5.9	64			0
	2695	PENT	8	S	2257.3	2257.3	.1	11.2			
	1415	MANI	4	S/F	2301	2307.3	19.8	217.7	72.6		
	8800	MANI	47	GB	2301	2306.2	20.6	2047.5	692.5		
	17000	NOBE	47	GB	2301.5	2306.3	14.8	2699			0
	4995	MANI	47	GB	2301.5	2306.4	19.3	832.7	277.6		
	35000	NAGO	47	GB	2301	2307	9	1260			
	2695	PENT	47	GB	2302	2306.5	38	1520	277		
	2695	MANI	47	GB	2303	2306.4	6.5	993.8	331.3		
	606	MANI	4	S/F	2305.6	2313.8	14.2	30.9	10.3		
	35000	NAGO	29	PBI	2311	2313	125	171			
	17000	NOBE	29	PBI	2316.3	2316.4	75	146			0
	2695	PENT	29	PBI	2340	2340	70	26	12.5		
20	35000	NAGO	5	S	0117	0117	1	31			
	17000	NOBE	20	GRF	0345.4	0346.4	3.8	11			0
	17000	NOBE	20	GRF	0454.6	0500.5	42	13			0
	9100	GORK	20	GRF	0454.9	0456	29	15	7		
	9100	GORK	20	GRF	0615.4	0620.4	13	7	3.5		
	260	ONDR	44	NS	0630 E		450 D	74	3		
	234	POTS	8	S	0633.5	0634	1	700	200		
	6100	KISV	27	RF	0712	0733	153	4			
	2950	GORK	21	GRF	0712		309				
	9100	ARCE	1	S	0717.3	0717.4	1.2				
	15000	KISV	4	S/F	0730	0731	5	30 D			
	3000	POTS	4	S/F	0736.5	0741.5	6.5	24			
	9100	ARCE	21	GRF	0738.5	0743.2	46				
	3100	GRIM	1	S	0738.5	0741.5	6	12	4		
	9100	GORK	21	GRF	0738.6	0803.6	38	20			
	6100	KISV	28	PRE	0738	0742.5	12	6			
	6100	KISV			0738	0741		3			
	2950	GORK	3	S	0740.2	0741.6	2.9	17	8		
	2650	DWIN	41	F	0740	0746	15	100	10		
	15000	KISV	4	S/F	0740	0742.5	5	13			
	9500	POTS	3	S	0741.5	0742.5	3.5	11			
	9100	GORK	1	S	0741.5	0742.6	2.3	8	4		
	10715	DWIN	3	S	0759	0759	7	130	30		
	6100	KISV	8	S	0758	0759.5	16	192			
	9500	POTS	29	PBI	0758.5	0759.5	19	151			
	10400	BERN	8		0758.5	0759.5	26	155			
	9100	ARCE	3	S	0758.6	0759.6	3				
	9100	GORK	4	S/F	0758.7	0759.8	4	170 D			
	3000	POTS	29	PBI	0759	0759.5	16	67			
	3100	GRIM	3	S	0759	0759.5	1.5	46	10		
	15000	KISV	8	S	0759	0759.7	4	79			
	2950	GORK	3	S	0759.2	0759.5	1.5	54	17		
	5730	IRKU	2	S	0759.2	0759.5	5	60	15		L
	8800	MANI	4	S/F	0759.4	0759.7	1.6	88.4	29.5		
	4995	MANI	3	S	0759.4	0759.7	1.6	158.1	52.7		
	2695	MANI	3	S	0759.5	0759.7	.7	69.1	23.1		
	3100	GRIM	29	PBI	0800.5	0800.5	21	13	4		
	9100	ARCE	29	PBI	0801.6		11.2				
	3100	GRIM	20	GRF	0827	0851.5	3	22	7		
	10400	BERN	45		0830	0851.7	95	20			
	9100	GORK	21	GRF	0837.9		230 D				
	930	BORD	8	S	0838	0838	.2	35	1		
	9500	POTS	20	GRF	0838.5	0851	67	17			
	3000	POTS	20	GRF	0838.5	0851.5	62	15			
	9100	ARCE	20	GRF	0838.9	0851.2	22.6				
	6100	KISV			0839	0852		14			
	6100	KISV	46	C	0839	0909.5	49	14			
	6100	KISV			0839	0935		7			
	9100	GORK	1	S	0908.5	0909.5	2.1	12	6		
	9100	ARCE	1	S	0909.2	0909.6	2.2				
	9100	ARCE	22	GRF	0923.2	0927.4	13				
	10400	BERN	45		1014.4	1023.2	14	11			
	9500	POTS	20	GRF	1016	1023	13	11			
	9500	POTS	21	GRF	1042	1103	36	22			
	10400	BERN	45		1042.3	1101.2	52	34			
	3000	POTS	20	GRF	1043	1044.6	5	6.9			
	9100	ARCE	21	GRF	1051.2	1103.3	42				
	6100	KISV	45	C	1055	1101.2	35	17			
	6100	KISV			1055	1108.5		34			
	9500	POTS	2	S/F	1100	1101.2	2	36			
	3000	POTS	3	S	1100	1101.4	2	11			
	9100	GORK	1	S	1100	1101.2	2.4	21	10		
	15000	KISV	45	C	1100	1101	12	19			
	15000	KISV			1100	1108.5		16			

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	9100	ARCE	3	S	1100.4	1101.6	2.3				
	9100	GORK	2	S/F	1107.7	1108.3	1.5	23			
	9500	PCTS	4	S/F	1108	1108.6	1	27			
	3000	PCTS	1	S	1108	1109	2	4.5			
	7000	SAOP	-5	C	1108.1E	1108.1	12.4	45			3R
	9100	ARCE	1	S	1108.1	1108.6	3				
	7000	SAOP	-5	C	1146	1152.7	15	23			16L
	9100	ARCE	1	S	1148.9	1152.6	8				
	2650	DMIN	1	S	1151	1152	4	48	28		
	3100	CRIM	3	S	1151	1153	3	46	19		
	3000	PCTS	3	S	1151.7	1152.7	3.8	39			
	9100	GORK	1	S	1151.7	1152.8	2.2	8	4		
	1470	PCTS	3	S	1151.9	1152.7	3.1	11			
	2950	GORK	3	S	1151.9	1152.7	2.1	30	15		
	9500	PCTS	1	S	1152	1152.5	2.9	4.7			
	2800	OTTA	4	S/F	1152	1152.5	2	38	16		
	6100	KISV	4	S/F	1152	1152.5	3	10			
	10465	BERN	4		1208	1209.7	16	41			
	9100	ARCE	-5	C	1208	1211.1	3.6				CHART DISTURBED
	9400	HUAN	3	S	1208	1209.7	2.5	56.7	26.9		L
	9100	ARCE			1208	1209.9	2.9				
	9100	GORK	-5	C	1209	1209.9	4.9	45			
	10715	DMIN	1	S	1209	1210	3	40	28		
	9100	GORK			1209	1212.2		12			
	9400	HUAN	29	PBI	1210.5	1210.5	25.7	11	3		C
	9100	ARCE			1210.9	1211.1	.7				
	9400	HUAN	1	S	1211.3	1211.7	1.5	9.4	3.8		L
	9100	ARCE	29	PBI	1211.6		15				
	9400	HUAN	20	GRF	1313.2	1338.8	51.5	18.9	8.9		B
	7000	SAOP	3	S	1314	1338.8	46	35			C
	9100	ARCE	20	GRF	1323.5	1339.3	49				
	10400	BERN	4		1333	1338.7	45	14			
	2800	OTTA	20	GRF	1335	1339	70	9.2	3		
	4995	BOUL	3	S	1336.5	1338.5	5	20	7		
	9400	HUAN	20	GRF	1427.2	1438.8	19.8	9.4	2.9		B
	10400	BERN	3		1437.5	1439	13	10			OPR
	9100	ARCE	1	S	1438.1	1440	7.5				
	2800	OTTA	2-	R	1458	1503	5	3.8	1.8		
	2800	OTTA	27F	RF	1458		165	3.8	3.4		
	2800	OTTA	2-P	R	1503		130	3.8			
	9400	HUAN	20	GRF	1520.5	1542.5	58.6	11	4.2		B
	7000	SAOP	41	F	1529						3 BURSTS
	7000	SAOP	3	S	1529	1540.1	29	39			B
	10400	BERN	3		1539.-	1540	7	20			
	9400	HUAN	3	S	1539.5	1540.1	1.9	31.5	13.9		B
	9100	ARCE	4	S/F	1539.7	1540.2	2.4				
	9400	HUAN	20	GRF	1627.6	1701	43.7	12.6	8.4		B
	7000	SAOP	20	GRF	1629			10			B
	2800	OTTA	26	FAL	1713	1743	30	-3.3	-1.9		
	7000	SAOP	20	GRF	1726		61 D	9			B
	2800	OTTA	23	GRF	1800	1844	115	11.2	5		
	2800	OTTA	1	S	1813.8	1815	3	3	1.6		
	9400	HUAN	20	GRF	1814.4	1904	141.8	34.7	16.5		B
	2800	OTTA	22	GRF	1857	1859.5	25	11.8	5.9		
	9400	HUAN	20	GRF	2036.2	2058.4	49.7	14.2	8		L
	9400	HUAN	3	S	2048.7	2050.2	2.7	12.6	6.8		L
	9400	HUAN	3	S	2152.8	2154	3.3	37.8	23.8		L
	2800	OTTA	1	S	2153.5	2154.3	2	9.2	4.6		
	9400	HUAN	29	PBI	2156.1	2156.1	16.4	12.6	7.7		B
	2675	PENT	20	GRF	2255	2315	50	3.4	1.9		
	1400	SYDN	-6	C	2303	2306	37				
	700	SYDN	-6	C	2305.8		14				
21	5730	IRKU	21	GRF	0120.5	0126.7	17	12			L
	5730	IRKU	1	S	0205	0205.5	5	8			R
	5730	IRKU	21	GRF	0236	0251	26	18			C
	5730	IRKU	20	GRF	0350	0351	6	9			
	5730	IRKU	-5	C	0358.3	0358.4	2	6			R
	5730	IRKU			0358.3	0358.9		15			R
	9100	GORK	21	GRF	0428.3	0439	165	6			
	2950	GORK	1	S	0428.5	0429	1.7	8.5	4		
	9100	GORK	1	S	0554	0554.5	1	17	8		
	200	ONDR	44	NS	0700 E		440 D	19			
	6100	KISV	-5	C	0731	0731.5	9	4			
	950	BURO	8	S	0739	0739.1	.2	35	1		
	950	BURO	8	S	0801.4	0801.4	.2	40	1		
	9100	GORK	20	GRF	0816.2	0917.6	7.6	6	3		
	950	BURO	8	S	0827	0827.1	.2	42	1		
	950	BURO	8	S	0851.5	0851.5	.2	39	1		
	1470	PCTS	3	S	0934.2	0935.2	2.6	6.5			
	950	BURO	8	S	0943.4	0943.4	.2	33	1		
	6100	KISV	21	GRF	1007	1008.5	23	10			
	3000	PCTS	3	S	1007.5	1008.5	5	24			
	1470	PCTS	3	S	1007.5	1008.8	4	6.1			
	2950	GORK	1	S	1008.1	1009	3.7	14	7		

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
					UT	UT	MINUTES	PEAK	MEAN		
	2650	OWIN	1	S	1008	1009	3	20	10		
	3100	CRIM	3	S	1008	1009.5	3	26	3		
	9100	GORK	20	GRF	1008	1011.5	9.1	6	3		
	930	BORO	8	S	1009.5	1009.5	.2	32	1		
	3100	CRIM	29	PBI	1010.5	1010.5	13	6			
	930	BORO	8	S	1039.2	1035.2	.2	30	1		
	9100	GORK	20	GRF	1039.8	1049.6	14	6	3		
	930	BORO	8	S	1104.8	1104.8	.1	32	1		
	7000	SAOP	2	S/F	1127.2	1127.8		8			0
	930	BORO	8	S	1135.5	1135.5	.1	35	1		
	9400	HUAN	3	S	1145.6	1153.8	16.4	15	5.2		L
	9100	ARCE	1	S	1145.7	1146	1				
	9500	POTS	20	GRF	1147	1153.5	21	14			
	9100	GORK	22	GRF	1149.8	1153.6	13.5	13	6		
	10400	BERN	4		1210	1212.5	4	36			
	9400	HUAN	3	S	1210.7	1212.5	2.4	51.6	20.1		L
	7000	SAOP	46	C	1211	1212.5	3	56			1L
	6100	KISV	8	S	1211	1212.5	4	25			
	10715	OWIN	1	S	1211	1212	2	25	10		
	9500	POTS	4	S/F	1211.5	1212.5	1.6	41			
	9100	ARCE	4	S/F	1211.8	1212.7	2.4				
	9100	GORK	4	S/F	1212	1212.3	1.8	50	25		
	9400	HUAN	29	PBI	1213.1	1213.1	20.9	3.3	1.7		L
	930	BORO	8	S	1214.7	1214.7	.1	32	1		
	930	BORO	8	S	1257.3	1257.3	.1	32	1		
	9400	HUAN	20	GRF	1324.7	1342.4	53.3	21.6	5.6		L
	2800	OTTA	1A	S	1336	1339	10	5.4	2.7		
	7000	SAOP	46	C	1336.4	1338.2	38	41			3L
	9400	HUAN	48	F	1336.5	1337.6	4.7	38.2	22.4		L
	10400	BERN	4		1336.6	1338.3	18	33			
	2650	OWIN	2	S/F	1337	1339	3	25	15		
	2800	OTTA	1	S	1337	1337	1	5			
	10715	OWIN	2	S/F	1337	1338	14	25	10		
	9500	POTS	29	PBI	1337.5	1337.9	13	31			
	3000	POTS	3	S	1337.5	1338.5	3.5	35			
	2800	OTTA	3	S	1338.2	1338.5	1.2	23	8		
	2800	OTTA	1	S	1348	1453	9	2.2	1.4		
	10400	BERN	4		1357.4	1359.3	20	27			
	9500	POTS	3	S	1357.5	1359.8	2.5	21			
	930	BORO	8	S	1357.7	1357.7	.1	23	1		
	9400	HUAN	3	S	1357.8	1359.3	2.9	26.6	13.7		L
	10715	OWIN	1	S	1359	1359.5	1	20	15		
	9400	HUAN	1	S	1444.2	1447.5	9.8	10	6		0
	7000	SAOP	27	RF	1444.5			14			0
	2800	OTTA	20	GRF	1445	1448.5	15	10	4.8		
	2800	OTTA	20	GRF	1506.5	1509	15	4.2	2.1		
	9400	HUAN	20	GRF	1520.7	1524.3	41.6	5	1.7		0
	7000	SAOP	20	GRF	1522.4		11.6	11			0
	2800	OTTA	1	S	1524	1524.3	1	5	1.3		
	7000	SAOP	4	S/F	1544.3	1545.1	17	19			27L
	2800	OTTA	22	GRF	1544	1545	16	7.6	2.6		
	930	BORO	8	S	1700.7	1700.7	.1	22	1		
	2800	OTTA	21	GRF	1730	1825	85	3	1.8		
	9400	HUAN	20	GRF	1755.6	1830.8	53	8.3	3.4		0
	2800	OTTA	6	S	1826.3	1826.4	.5	2.6	1.3		
	9400	HUAN	3	S	1826.3	1826.7	1.6	11.6	6.6		0
	9400	HUAN	20	GRF	1914.8	1920	12.1	5	2.5		0
	2800	OTTA	21	GRF	1945	2016	75	3.6	1.8		
	2695	PENT	1	S	2010	2011	3	6.6	3.3		
	2800	OTTA	21	GRF	2107	2123	85	3	1.6		
	9400	HUAN	3	S	2108.7	2110.2	2.5	106.4	43.1		0
	2800	OTTA	8	S	2110	2110.1	.5	6.4			
	9400	HUAN	29	PBI	2111.2	2111.2	24.4	18.3	5		0
	5730	IRKU			2344	2353		1008			L
	5730	IRKU	49	GB	2344	2350.7	40	32			L
	5730	IRKU			2344	2351.1		45			L
	17000	NOBE	28	PRE	2348.7	2351.2	2.5	10			C
	4995	MANI	47	GB	2349.7	2352	5.6	687	229		
	8800	MANI	47	GB	2350	2352	5.6	1473.6	491.3		
	2695	MANI	4	S/F	2350.3	2352	4.1	90.8	30.3		
	2695	PENT	45	C	2350	2353.2	8	200	47		
	17000	NOBE	45	C	2351.2	2352.8	4.4	502			0
	17000	NOBE	24	PBI	2355.6	2355.6	40	48			0
	2695	PENT	29	PBI	2358	2358	20	13	6.5		
22	100	HIRA	42	SER	0004.5	0006.5	3	850	280		ML
	200	HIRA	42	SER	0005	0006.5	2	200	40		0
	17000	NOBE	20	GRF	0105.6	0106.3	16.6	27			0
	17000	NOBE	20	GRF	0214.7	0216	15.4	33			0
	4995	MANI	4	S/F	0232	0234.3	5.2	193.9	64.6		
	8800	MANI	4	S/F	0232	0234.3	5.2	341	113.7		
	17000	NOBE	45	C	0233.4	0235.4	23.3	98			C
	5730	IRKU	2	S	0233	0235.4	17	60 0			L
	17000	NOBE	8	S	0320.1	0320.3	.4	93			0
	17000	NOBE	29	PBI	0320.5	0320.5	1.9	14			0

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DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
					UT	UT	MINUTES	PEAK	MEAN		
22	17000	NOBE	1	S	0433	0433.3	.9	15			0
	9100	GORK	1	S	0433.2	0433.9	3.5	15	7		
	850	GORK	1	S	0433	0434.3	.7	~	2		
	9100	GORK	21	GRF	0603.6	0625.7	11	5			
	8100	KISV	21	GRF	0607	0609.7	10	15			
	9100	GORK	1	S	0608.6	0609.0	1.9	15	7		
	2951	GORK	1	S	0629.3	0630	2.1	2.7	1.3		
	8100	KISV			0640	0654		9			
	8100	KISV	~5	C	0646	0648	14	8			
	2950	GORK	1	S	0647	0649	2.3	6.5	3.2		
	3100	GRIM	1	S	0647	0648	2	17	6		
	3100	GRIM	29	PBI	0648.5	0653.5	28	8			
	9100	GORK	1	S	0653.5	0654	2.5	7	4		
	8100	KISV	1	C	0727.8	0728	1	3			
	8911	MANI	3	S	0729.2	0729.7	1	53.7	17.9		
	~895	MANI	3	S	0729.3	0729.7	1.5	87.7	29.2		
	10400	BEAN	~5		0729.3	0730.8	19	39			
	8100	KISV	0	S	0730.5	0730.8	~	54			
	8730	IRKU	2	S	0730.5	0730.8	5	40			L
	9100	GORK	~	S/F	0730.2	0730.9	4.1	53	27		
	2950	GORK	1	S	0730.6	0730.9	2.2	16	8		
	9100	ARCE	3	S	0730.7	0731.1	1.7				
	3100	GRIM	3	S	0730	0730.5	2	35	12		
	10710	OWIN	1	S	0730	0731	3	30	10		
	9100	ARCE	29	PBI	0732.4		31				
	9100	ARCE	21	GRF	0811.5		24				
	15000	KISV	0	S	0814.3	0814.8	2	60			
	8100	KISV	1	S	0815	0815.8	2	3			
	10710	OWIN	~1	F	0815	0822	15	25	10		
	10400	BEAN	~5		0815.3	0815.8	19	25			
	10400	BEAN	~5		0815.3	0821.9	1~	37			
	9100	GORK	2	S/F	0815.5	0816	1.2	28	10		
	9100	ARCE	3	S	0815.8	0816	~				
	15000	KISV	~5	C	0820	0820.5	5	30			
	8100	KISV	~5	C	0820	0822	8	60			
	9100	GORK	~5	C	0821.2	0822	5.7	~6			
	9~~~	GORK			0821.2	0825		24			
	8730	IRKU			0821.3	0824.9		~8			L
	8730	IRKU	~5	C	0821.3	0822	11	57	17		L
	9500	POTS	23	GRF	0821.5	0821.8	6.5	33			
	3063	POTS	23	GRF	0821.5	0821.9	5	27			
	9100	ARCE			0821.5	0822	2.4				
	3100	GRIM	3	S	0821.5	0822	1	34	13		
	9100	ARCE	~5	C	0821.5	0822	8.8				
	2955	GORK	~	S/F	0821.8	0822	1	21	10		
	2650	OWIN	1	S	0822	0822.5	1	15	10		
	9100	ARCE			0823.9	0825.1	6.4				
	3100	GRIM	1	S	0824	0824.5	1	13	4		
	53	UPIC	3	S	0948.1	0948.2	.5				
	29	UPIC	3	S	0948	0948.2	.4				
	7000	SHOP	~	S/F	1056.8	1057.~	3	14			4R
	3100	GRIM	1	S	1057	1057.5	.5	14	4		
	8100	KISV	0	C	1057	1057.5	1	10			
	9100	ARCE	1	S	1057.2	1057.5	1.8				
	2800	OTTA	0	S	1154.5	1154.7	.8	6.2	3.1		
	7000	SHOP	2	S/F	1154.8	1154.8		9			3OR
	2801	OTTA	240	F	1233	1255	22	7	4.6		
	9400	HUAN	20	GRF	1255.2	1315	51.4	8.8	3.8		R
	7000	SHOP	3	S	1259.5	1300.2	5	12			0
	2301	OTTA	1	S	1315	1316.5	3	2	1.5		
	53	UPIC	2	S/F	1338.5	1338.9	.7				
	29	UPIC	2	S/F	1338.8	1339	.7				
	9406	HUAN	26	GRF	1400.6	1417.3	32.9	6.8	2		R
	930	BORO	8	S	1524.4	1524.~	.1	18	1		
	9401	HUAN	25	GRF	1610.5	1625.2	33.5	6	3.8		R
	930	BORO	8	S	1713.3	1713.~	.3	24	1		
	9400	HUAN	3	S	1740.~	1742.7	~.8	15.~	7.4		R
	2500	OTTA	1	S	1907	1907.7	1	3	1.5		
	2~	OTTA	2	S/F	1922	1923.5	2	3.6	1.8		
23	17000	NOBE	20	GRF	0202.8	0204.5	1~	15			0
	8730	IRKU	2	S	0202.9	0203.~	1.1	58			L
	26~5	MANI	3	S	0203	0204.7	2	65.7	21.9		
	8915	MANI	3	S	0203	0203	3	70.2	23.~		
	8900	MANI	3	S	0203	0203.2	1.8	56	18.7		
	8730	IRKU	29	PBI	0204.~		8	10			L

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DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	9100	GORK	20 GRF	0440.2	0445.6	28.5	11	6		
	9100	GORK	23 GRF	0614.5	0617.6	34.5	25	13		
	9100	ARCE	28 PRE	0615.7	0616.8	4.3				CHART DISTURBED
	15000	KISV	28 PRE	0616	0616	4	15			
	8100	KISV	- S/F	0616	0620.5	19	120 D			
	10400	BERN	3	0619.9	0620.5	10	124			
	17000	NOBE	8 S	0620.1	0620.5	.7	60			R
	2950	GORK	1 S	0620.4	0620.6	5.5	2.9	1.4		
	17000	NOBE	29 PBI	0620.8	0620.8	4.5	20			L
	5730	IRKU	2 S	0620	0620.5	5	55			R
	9100	ARCE	3 S	0620	0620.5	4.7				
	9100	GORK	5 S	0620	0620.7	3.7	160	80		
	15000	KISV	8 S	0620	0621	5	60 D			
	9100	ARCE	30 PBI	0624.7		29				
	10400	BERN	3	0639.5	0639.8	4	26			
	17000	NOBE	1 S	0639.5	0639.7	.6	50			R
	9100	GORK	1 S	0639.6	0639.9	.5	17	8		
	9100	ARCE	3 S	0639.7	0640	2.8				
	2950	GORK	1 S	0639.7	0639.8	.4	5.9	2.9		
	15000	KISV	8 S	0639	0640	3	45 D			
	260	ONDR	44 NS	0750 E		372 D	24			
	10400	BERN	27	0753	0759.6	17	11			
	9100	GORK	22 GRF	0753.2	0831.6	57.8	25	13		
	9100	ARCE	27 RF	0759	0805.2	9				
	2950	GORK	1 S	0800.1	0800.5	1.2	3.9	1.9		
	3100	GRIM	3 S	0812.5	0814	3	28	9		
	2950	GORK	1 S	0813.2	0813.8	6.2	14	7		
	2650	DWIN	1 S	0813	0814	7	15	10		
23	3000	POTS	29 PBI	0813	0814.2	12	20			
	3100	GRIM	29 PBI	0815.5	0816	6	9			
	8100	KISV	20 GRF	0825	0832	55	12			
	15000	KISV	45 C	0825	0831	25	15			
	10400	BERN	45	0825.4	0828.1	30	17			
	9100	ARCE	23 GRF	0826.5	0831.8	25				
	9100	ARCE	4 S/F	0846.8	0847.5	1.4				
	9100	GORK	20 GRF	0910.5	0916.3	19	9	4.5		
	930	BORO	8 S	0924.6	0924.7	.1	25	1		
	930	BORO	8 S	0955.7	0955.7	.1	18	1		
	3100	GRIM	21 GRF	1003	1114	101	15	5		
	8100	KISV	8 S	1021	1022	2	25 D			
	650	GORK	1 S	1022.2	1022.4	.5	6	3		
	10400	BERN	8	1022.2	1023	10	51			
	9100	GORK	23 GRF	1022.4	1023.7	18.5	17	6		
23	9500	POTS	3 S	1023	1023	5	88			
	9100	GORK	3 S	1023.1	1023.3	.4	130	60		
	10715	DWIN	1 S	1023	1023.5	1	70	40		
	2950	GORK	1 S	1023	1023.1	.6	8	3		
	8100	KISV	29 PBI	1023	1023	7	11			
	930	BORO	8 S	1046.4	1046.6	.1	31	1		
	8100	KISV	4 S/F	1047	1049	3	21			
	3100	GRIM	3 S	1049	1050.2	2	27	9		
	2650	DWIN	1 S	1049	1050	6	20	10		
	8100	KISV	20 GRF	1055	1100	35	9			
	8100	KISV	8 S	1156	1157.5	2	20			
	10400	BERN	3	1157	1158.5	15	22			
	7000	SAOP	46 C	1157.4	1158.5	13	40			10R
	9400	HUAN	3 S	1157.5	1158.6	4.3	24.4	11.4		R
	9100	ARCE	3 S	1157.5	1159.6	5.3				
23	9500	POTS	4 S/F	1157.5	1159	5	26			
	8100	KISV	29 PBI	1158	1158		14			
	9100	ARCE	29 PBI	1202.8		10				
	7000	SAOP	3 S	1240	1240.8	1.4	11			48R
	33	UPIC	2 S/F	1250.3	1250.4	.4				
	29	UPIC	2 S/F	1250.4	1250.5	.4				
	33	UPIC	2 S/F	1252.5	1252.9	.6				
	29	UPIC	2 S/F	1252.5	1252.9	.5				
	2800	OTTA	240 R	1525	1600	35	4.2	2.1		
	9100	ARCE	1 S	1526.9	1527.1	.5				
	9100	ARCE	1 S	1534.5	1534.6	.5				
	7000	SAOP	45 C	1617.6	1644.8	40	25			13R
	9400	HUAN	20 GRF	1630.5	1637.8	30.1	26	9		R
	2800	OTTA	21 GRF	1630	1642	35	5	2.5		
	2400	OTTA	40 F	1631.5	1633.4	3	18.4			
	930	BORO	41 F	1632	1633.2	2	26	3		
	2300	OTTA	20 GRF	1740	1755	60	3.4	2		
	9400	HUAN	1 S	1822.8	1823.6	1.4	9.8	5.5		R
	2600	OTTA	8 S	1853	1853	.1	12.4			
	9400	HUAN	3 S	1937.6	1938.6	3.2	11.4	4.6		R
	9400	HUAN	20 GRF	2032	2038.8	34.3	16.3	7.9		R
	2695	PENT	20 GRF	2215	2250	75	4.8	2.4		
24	5730	IRKU	45 C	0148	0151.6	14	27			R
	5730	IRKU		0148	0153.3		24			R
	650	GORK	4 S/F	0501.9E	0503.1	2 D	260			
	8100	KISV	3 S	0503	0506.3	7	100			
	9100	GORK	21 GRF	0505.5	0512.9	45	28	14		
	4995	MANI	3 S	0506	0508	4	61.3	20.4		
	8800	MANI	- S/F	0506	0507.8	-	141.4	47.1		

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					UT	UT	MINUTES	PEAK	MEAN		
	17000	NOaE	45	C	0506.7	0509	17	70			R
	9730	IRKU			0506.7	0508.9		55			L
	9730	IRKU	45	C	0506.7	0507	3.5	25			L
	9730	IRKU			0506.7	0508.3		60			L
	2950	GORK	1	S	0507.7	0509.1	3.1	10.5	5		
	9100	GORK	46	C	0507	0508.5	5.3	146			
	9100	GORK			0507	0509.3		76			
	9730	IRKU	29	PBI	0510.2		35	32			L
	6100	KISV	29	PBI	0510	0510	20	25			
	6100	KISV	8	S	0634	0635.5	4	5			
	282	IZMI	41	F	0656.2	0657	2.2	100			
	228	HARS	45	C	0656.6	0656.8	1.2	100	40		
	260	ONDR	44	NS	0700 E		433 D	61			
	930	BORD	8	S	0716.6	0716.9	.1	26	1		
	6100	KISV	8	S	0821	0823.7	4	4			
	282	IZMI	4	S/F	0920.5	0921	1	60	20		
	536	ONDR	2	S/F	0956.6	0956.8	.6	10	1		
	3000	POTS	3	S	1007	1007.5	1	12			
	1470	POTS	1	S	1007	1007.7	2	5.2			
	6100	KISV	8	S	1007	1007.5	1	7			
	3100	CRIM	1	S	1007	1007.8	1	9	3		
	536	ONDR	2	S/F	1007.2	1007.2	.7	10	1		
	950	GORK	1	S	1007.3	1008	3	3	1.5		
	2950	GORK	1	S	1007.3	1007.9	1.6	6.7	3.3		
	620	GORK	2	S/F	1007.3	1007.9	.8	17.5	4		
	9500	POTS	1	S	1007.5	1007.6	.5	3.2			
	930	BORD	8	S	1023.3	1023.4	.2	17	1		
	930	BORD	8	S	1049.4	1049.5	.2	18	1		
	7000	SAOP	2	S/F	1122	1123.3		6			24R
	930	BORD	8	S	1140.2	1140.2	.1	35	1		
	33	UPIC	45	C	1146.6	1146.9	.7				
	29	UPIC	45	C	1146.8	1147	.8				
	930	BORD	8	S	1203.2	1203.2	.1	36	1		
	33	UPIC	2	S/F	1203.3	1203.4	.3				
	29	UPIC	2	S/F	1203.3	1203.4	.3				
	930	BORD	8	S	1227.6	1227.6	.1	32	1		
	7000	SAOP	45	C	1252.4	1254.6	6.6	17			8R
	930	BORD	8	S	1256.1	1256.2	.2	38	1		
	930	BORD	8	S	1323.4	1323.4	.1	35	1		
	930	BORD	8	S	1407.3	1407.3	.1	33	1		
	2800	OTTA	20	GRF	1425	1440	40	2.4	1.2		
	930	BORD	8	S	1435.3	1435.3	.1	26	1		
	930	BORD	8	S	1501.5	1501.5	.1	35	1		
	930	BORD	8	S	1533.5	1533.5	.1	37	1		
	9400	HUAN	20	GRF	1550.7	1557.8	11.4	5.3	1.8		Q
	930	BORD	8	S	1603.7	1603.7	.1	21	1		
	9400	HUAN	20	GRF	1635.2	1641	11.6	7	2.8		Q
	2800	OTTA	21	GRF	1738	1855	380	9.6	4.8		
	9400	HUAN	20	GRF	1740.8	1756.3	40.3	12.3	4.9		R
	7000	SAOP	45	C	1747	1751.4	14	35			12R
	9400	HUAN	3	S	1748.3	1751.1	6.9	31.6	14.4		R
	2800	OTTA	21	GRF	1749	1752	15	8.2	4		
	2800	OTTA	8	S	1750.1	1750.1	.1	8.2			
25	9100	GORK	20	GRF	0632.5	0653	27.4	6	3		
	3100	CRIM	1	S	0645.5	0647	.5	11	7		
	3100	CRIM	1	S	0648.5	0649	1	16	5		
	3100	CRIM	1	S	0652	0652.5	1	6	2		
	9100	GORK	20	GRF	0734	0737.3	11.7	6	3		
	260	ONDR	44	NS	0738 E		382 D	27			
	127	TORN	43	NS	1227	1247.8	33 U	16	.1		V1,DISTURBED
	9100	GORK	22	GRF	0827	0841	27	9	4.5		
	6100	KISV	21	GRF	0940	0941	15	6			
	9163	ARGE	2	S/F	0930.2	0930.4	1.2				
	3100	CRIM	3	S	1049	1114	23	51	17		
	10400	BERN	27		1052	1130.3	100	27			
	2950	GORK	21	GRF	1057.2	1111.5	64	17	8.5		
	3000	POTS	23	GRF	1103	1114.2	57	31			
	1470	POTS	23	GRF	1103	1116.7	79	20			
	6100	KISV	45	C	1105	1126	45	28			
	9500	POTS	28	GRF	1108	1130.5	77	25			
	930	BORD	48	F	1108	1130.3	29	46	7		
	3100	CRIM	30	PBI	1108	1118	80	23			
	9100	GORK	22	GRF	1108.2	1130.5	48.8	27	13		
	2650	OMIN	45	C	1110	1129	30	110	40		
	2950	GORK	1	S	1112	1114.1	4.4	11.6	5		
	9400	HUAN	20	GRF	1113.6	1131.2	49.8	32.5	14.2		R
	260	ONDR	46	C	1124	1130.7	13	52	35		
	228	HARS	45	C	1124.5	1131	12	120	45		
	1470	POTS	4	S/F	1124.6	1130.7	10	85			
	3000	POTS	4	S/F	1124.7	1129	10	84			
	950	GORK	4	S/F	1124.7	1130.4	12.2	40			
	536	ONDR	45	C	1124.8	1130.5	15	14	9.6		
	650	GORK	20	GRF	1124.8	1132.3	14.6	17	6		
	3100	CRIM	41	F	1125	1129	13	55	18		

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	606	ONDR	45	C	1125	1130.5	11	28	19		
	202	IZMI	48	C	1125	1131.5	12	62	25		
	127	TORN	27	RF	1127.6	1132	10.3	35	12		
	2950	GORK	46	C	1128.6	1129	4.8	55			
	2950	GORK			1128.6	1130		47			
	127	TORN	42	SER	1138.2	1140.2	8.3	35			
	650	GORK	28	GRF	1150.7	1157.8	12.3	8	4		
	950	GORK	4	S/F	1151	1154.7	7.9	10			
	536	ONDR	45	C	1152	1155.8	8	6	3.7		
	930	BORD	40	F	1153	1154.7	7	13	3		
	127	TORN	27	RF	1153.2	1155.7	11.3	27	7.5		
	113	POTS	41	F	1140.5	1140.5	.4	160	15		
	2950	GORK	1	S	1154.2	1154.5	2	6	3		
	606	ONDR	45	C	1154.5	1155.8	5	8	6		
	29	UPIC	2	S/F	1155.6	1156.5	2				
	33	UPIC	2	S/F	1156	1156.8	1.4				
	7000	SAOP	1	S	1239.4	1240.4		7			27R
	2800	OTTA	20	GRF	1240	1400	220	7.6	4		
	7000	SAOP	40	F	1307	1337	153	36			0
	930	BORD	41	F	1309.8	1309.8	1	16	2		
	9400	HUAN	28	GRF	1320.7	1347.8	43.8	4.9	1.8		R
	1470	POTS	8	S	1422.5	1422.9	.6	15			
	9100	ARCE	1	S	1453.9	1454.1	.6				
	1420	BOUL	4	SF	1459 E	1500	1.50	37 U	12		
	2800	OTTA	21	GRF	1700	1735	85	2.8	1.4		
	2800	OTTA	2	S/F	1811.8	1811.9	1	3.2	1.6		
	2800	OTTA	21	GRF	1910	1930	60	6	3		
	2800	OTTA	45	C	1925.5	1926	3	9.4	4.5		
	2800	OTTA	21	GRF	2030	2045	40	4.8	2.4		
	9400	HUAN	3	S	2036	2036.7	4	17.9	9.6		R
	2800	OTTA	1	S	2036	2037	6	3.2	1.6		
	9400	HUAN	20	PBI	2040	2040	36.6	14.6	4.6		R
	2800	OTTA	4	S/F	2132	2135	7	11.8	4		
	9400	HUAN	28	GRF	2202.7	2210.4	15	4.9	1.9		0
	2695	PENT	21	GRF	2240	2250	40	5.6	2.8		
	2695	PENT	3	S	2244.3	2245.5	4	11.8	5.9		
26	200	HIRA	43	NS	0350	0713	250 D	10	5		WL
	260	ONDR	44	NS	0702 E		420 D	168	5		
	127	TORN	44	NS	0800 E	1345.2	420 D	539	2.2		W1
	202	IZMI	45	C	0706	0706.2	1.5	370			
	6100	KISV	4	S/F	0750	0752	10	6			
	234	POTS	8	S	0900.6	0900.6	.10	2100	700		
	3100	CRIM	1	S	1130.5	1130.8	.5	8	3		
	3000	PUTS	20	GRF	1143	1149	55	19			
	3100	CRIM	3	S	1144	1149	23	23	8		
	1470	POTS	20	GRF	1147	1149	51	4			
	536	ONDR	42	SER	1253	1338.7	55	34			
	2800	OTTA	20	GRF	1300	1308	60	2.4	1.2		
	9400	HUAN	20	GRF	1300.4	1318.3	33.3	3.4	1.4		0
	930	BORD	41	F	1305	1305.8	3	23	3		
	113	POTS	42	SER	1311.6	1315.8	4.6	1000	20		
	9400	HUAN	3	S	1314.6	1315.9	2.2	11.8	6.4		R
	7000	SAOP	40	F	1315		93				
	127	TORN	47	GB	1315.5	1315.7	1	669	334		
	234	POTS	4	S/F	1315.6	1315.6	.6	950	150		
	930	BORD	8	S	1315.6	1315.7	.3	57	2		
	228	HARS	45	C	1337	1337	2	250	16		
	113	POTS	42	SER	1337.2	1337.3	11	2800	35		
	930	BORD	41	F	1337.2	1337.3	.6	17	2		
	29	UPIC	8	S	1337.2	1337.5	.7				
	33	UPIC	4	S/F	1337.3	1337.3	.5				
	234	POTS	42	SER	1337.7	1337.7	9.9	420	1 D		
	228	HARS	45	C	1344.5	1344.8	1.5	120	15		
	2800	OTTA	1	S	1551	1552.5	3	4	2		
	2800	OTTA	20	GRF	1610	1705	110	4	2.4		
	9400	HUAN	3	S	1737.2	1737.3	1.5	55.8	16.9		L
	2800	OTTA	20	GRF	1805	1835	105	3.6	1.8		
	9400	HUAN	3	S	1846.2	1846.3	1.6	62.5	19.7		L
	2800	OTTA	24	R	2005	2015	10	4	2		
	2800	OTTA	27A	RF	2005		135	4	3.7		
	2800	OTTA	24P	R	2015		115	4			
	200	HIRA	44	NS	2028 E	2250	270 D	10	5		WL
	100	HIRA	43	NS	2338	0705	500 D	20	8		
	2800	OTTA	4	S/F	2055	2100.8	12	40.4	23.1		
	4995	BOUL	45	C	2056	2100	9.5	27	9		
	2800	OTTA	29	PBI	2107	2107	40	13.8	8.4		
	2800	OTTA	26	FAL	2210	2220	10	-4	-2		
27	5730	IRKU	21	GRF	0213	0219.4	10	9			R
	5730	IRKU			0213	0220.2		9			R
	100	HIRA	7	C	0241	0242	2	810	290		WL
	234	POTS	8	S	0624	0624.1	.5	500	150		
	200	HIRA	43	NS	0650	0706	100 D	35	15		WL, WR
	260	ONDR	44	NS	0710 E		412 D	34	4		

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	127	TORN	+3	NS	0745	0837.7	435 D	2040	1.8		V1
	3100	C-IM	24	GRF	0651	0727	249	8	3		
	930	BORC	+0	F	0655	0702.7	12	24	4		
	930	BORD	+1	F	0726	0726.2	.4	13	2		
	9100	GORK	1	S	0746.7	0749.6	1.8	6	3		
	9100	ARCE	1	S	0757.2	0758	6.4				
	9100	GORK	1	S	0757.2	0757.3	1.7	8.5	4		
	6100	KISV	8	S	0757	0757.7	1	5			
	15000	KISV	1	S	0757	0758	2	7			
	930	BORC	+6	C	0837	0837.7	1.2	84	9		
	930	BORD	41	F	0840.7	0841.6	1.3	18	3		
	113	POTS	+	S/F	0840.8	0841	.5	200	7		
	6100	KISV	4	S/F	0854	0855	3	2			
	202	IZMI	8	S	0917.8	0917.8	.5	320 D	130		
	113	POTS	41	F	0918	0918.0	.6	350	35		
	930	BORD	+1	F	0918	0918.5	1.7	24	2		
	202	IZMI	+1	F	1019	1021	3.5	65			
	127	TORN	+8	C	1019.2	1019.9	2.6	328	142		
	930	BORD	41	F	1019.4	1019.4	2.8	24	2		
	220	HARS	45	C	1019.5	1020.2	2	120	15		
	113	POTS	4	S/F	1019.6	1019.7	1.5	700	70		
	7000	SAOP	+0	F	1413		124				
	9400	HUAN	20	GRF	1438.3	1501.7	38.3	6.9	4.6		0
	113	POTS	+1	F	1449.5	1453.2	3.8	190	3		
	2800	OTTA	20	GRF	1450	1530	100	4.8	2.4		
	9400	HUAN	20	GRF	1520.8	1536.2	42.8	8.7	3.2		0
	2800	OTTA	20	GRF	1645	1705	55	3.8	2		
	9400	HUAN	20	GRF	1930.7	1945.6	42.1	5.2	3.3		L
	200	MIRA	44	NS	2028 E	0020	716 D	15	5		WL
	2045	PENT	8	S	2243.9	2244	.8	6.6			
28	100	MIRA	43	NS	0000	0631	480 D	18	8		0
	202	IZMI	43	NS	0600		360	25			
	127	TORN	44	NS	0630 E	1256.1	580 D	87	2.4		V2
	260	ONDR	44	NS	0700 E		420 D	40	4		
	3100	C-IM	1	S	0756	0757.5	2	8	2		
	850	GORK	4	S/F	0756.6	0756	1.9	27	5		
	1000	POTS	3	S	0757	0758.2	1.5	8.1			
	1470	POTS	+	S/F	0757	0758.2	2	25			
	930	BORD	3	S	0757	0758.1	2	26	5		
	950	GORK	3	S	0757	0759.1	2.1	20	10		
	9400	HUAN	20	GRF	1115	1137.5	39.7	6.7	4.3		0
	127	TORN	+7	GB	1121.5	1122.3	1.1	2290	175		
	33	UPIC	3	S	1301	1301	.4				
	29	UPIC	2	S/F	1301	1301.2	.4				
	2800	OTTA	240	R	1340	1355	15	3.8	1.9		
	9400	HUAN	20	GRF	1342.1	1403.3	47.2	8.4	4.7		0
	7000	SAOP	+0	F	1425		219				
	930	BORD	8	S	1431.4	1431.6	.4	45	2		
	9400	HUAN	20	GRF	1440.8	1456	35.5	5	2.2		0
	10400	BERN	1		1447.2	1448.1	2.2	10			
	8400	BERN	1		1447.2	1448.1	2.2	24			
	9400	HUAN	1	S	1447.3	1448.2	1	8.4	5.3		L
	9100	ARCE	1	S	1448	1448.3	2.6				
	2800	OTTA	22	GRF	1515	1530	25	4.4	2.2		
	930	BORC	8	S	1529.2	1529.2	.2	22	2		
	2500	OTTA	2	S/F	1345	1347	3	3.4			
	2800	OTTA	20	GRF	2000	2010	75	6.6	2.2		
	200	MIRA	44	NS	2030 E	2234	710 D	20	10		WL
	2800	OTTA	20	GRF	2130	2150	60	5.6	2.9		
	9400	HUAN	20	GRF	2151.4	2205.3	21.4	10	5.8		L
29	9100	GORK	21	GRF	0413.9	0417.6	28	10	3.7		
	9100	GORK	1	S	0414	0414.2	.8	12	9		
	9100	GORK	20	GRF	0536.8	0538.3	8	6.5	3		
	127	TORN	44	NS	0600 E	1426.9	580 D	1230	3.8		V2
	202	IZMI	44	NS	0600 E		360 D	28			
	260	ONDR	44	NS	0725 E		337 D	34	5		
	3100	C-IM	1	S	0647	0647.5	2	9	3		
	9100	GORK	1	S	0634.1	0635.2	5.8	5	2.4		
	8400	BERN	1		0913.5	0914	1	20			
	10400	BERN	1		0913.5	0914	1	6			
	536	ONDR	+5	C	1020	1020.2	3.5	29	1.6		
	930	BORC	8	S	1028.5	1028.6	.6	80	2		
	936	UNCP	3	S	1028.6	1028.6	.2	25			
	113	POTS	4	S/F	1044.9	1045	.4	190	15		
	29	UPIC	2	S/F	1045.2	1045.5	.7				
	33	UPIC	4	S/F	1045.4	1045.5	.7				
	6100	KISV	8	S	1109	1109.8	2	15			
	2800	OTTA	21	GRF	1210	1340	170	9.6	6.5		
	113	POTS	24	R	1240	1354	110 D	56			
	9400	HUAN	20	GRF	1320.5	1345.6	61.6	5.2	1.1		L
	2800	OTTA	1	S	1320.8	1321.4	2	7	3.5		
	2000	OTTA	240	R	1630	1648	18	3.8	1.9		
	2000	OTTA	20	GRF	1630	1635	30	2.4	1.4		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

SEPTEMBER 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	100	HIRA	44	NS	2030 E	0635	640 D	150	25		SL
	200	HIRA	44	NS	2030 E	0634	710 D	65	30		ML
	2695	PENT	22	GRF	2110	2240	160	6.3	3.4		
	500	HIRA	27	RF	2110	2245	165	15	10		SL
30	9100	GORK	40	F	0400		56				
	9100	GORK	1	S	0500.8	0501.2	1.3	16	3		
	950	GORK	1	S	0500.9	0501.1	1.2	4.7	2.5		
	127	TORN	44	NS	0600 E	0754	580 D	868	21		V1
	202	IZMI	44	NS	0600 E		360 D	70			
	536	ONDR	44	NS	0745 E		405 D	20			
	260	ONDR	44	NS	0745 E		405 D	103	9		
	9100	GORK	21	GRF	0600.9	0617.8	430 D	34	15		
	6100	KISV	4	S/F	0612	0616.5	13	48			
	3100	CRIM	21	GRF	0614	0922	178	25	8		
	8400	BERN	3		0615	0616.3	2	76			
	10400	BERN	3		0615	0616.3	2	49			
	15000	KISV	21	GRF	0615	0616.5	3	30			
	9100	GORK	4	S/F	0615.3	0616.5	2.5	58	17		
	15000	KISV	29	PBI	0618	0618	12	20			
	6100	KISV	27	RF	0720	0820	135	20			
	650	GORK	23	GRF	0757	0831.2	158 D	12	6		
	6100	KISV	4	S/F	0802	0805	13	20			
	3000	POTS	2	S/F	0802.5	0805	5	21			
	9100	ARCE	20	GRF	0802.5	0806.3	71				
	9500	POTS	2	S/F	0803	0804.6	6	14			
	1470	POTS	4	S/F	0803	0804.2	5	23			
	2650	OWIN	2	S/F	0803	0805	7	20	10		
	3100	CRIM	1	S	0803	0805	10	12	4		
	930	BORD	45	C	0803	0806.3	6	55	18		
	10715	OWIN	2	S/F	0803	0805	7	10	5		
	950	GORK	45	C	0803.3	0806.4	9.5	32			
	950	GORK			0803.3	0812.3		9			
	9100	GORK	1	S	0803.4	0806.2	5	15	7		
	10400	BERN	20		0803.5	0806.1	9.5	10			
	8400	BERN	20		0803.5	0806.1	9.5	19			
	606	MANI	4	S/F	0803.6	0806.3	5.1	94.5	31.5		
	803	ONDR	4	S/F	0803.6	0806.6	6.5	42	19		
	650	GORK	4	S/F	0803.8	0806.6	5.8	100			
	536	ONDR	4	S/F	0804	0806.4	6	72	34		
	6100	KISV	4	S/F	0906	0908	4	6			
	6100	KISV	4	S/F	0923.5	0924.5	3	4			
	6100	KISV	28	PRE	1035	1107.5	32	13			
	234	POTS	4	S/F	1100	1100.2	.4	400	20		
	7000	SAOP	46	C	1107.4	1105.6	36.2	93			23L
	10400	BERN	45		1107.5	1108.5	22.5	50			
	6100	KISV			1107.5	1119		45			
	8400	BERN	45		1107.5	1108.5	22.5	86			
	6100	KISV	45	C	1107.5	1108.5	13	60			
	9100	ARCE	3	S	1107.8	1108.8	2.9				
	9400	HUAN	20	GRF	1107.9	1108.6	3.1	77.3	23.4		L
	9500	POTS	3	S	1108	1108.5	3	66			
	9500	POTS	21	GRF	1108	1207.5	162	12			
	10715	OWIN	45	C	1108	1109	15	30	10		
	15000	KISV	8	S	1108.3	1108.7	1	16			
	9100	ARCE	30	PBI	1110.7		64				
	9400	HUAN	29	PBI	1111	1111	62.6	12	6.1		L
	33	UPIC	45	C	1111.5	1112	2.1				
	29	UPIC	45	C	1111.5	1112	2.1				
	15000	KISV	20	GRF	1116	1119	24	12			
	9400	HUAN	3	S	1116.8	1116.6	3.9	34.4	15.3		L
	9500	POTS	3	S	1117.5	1118.8	3.5	37			
	9100	ARCE	3	S	1117.7	1119.1	5				
	1470	POTS	23	GRF	1120	1133.5	138	32			
	3000	POTS	20	GRF	1126	1203	119	21			
	536	ONDR	45	C	1130	1133.4	20	52	18		
	930	BORD	40	F	1130	1133.3	15	21	5		
	803	ONDR	41	F	1131	1137.7	32	22	4		
	29	UPIC	45	C	1134.7	1135.1	2.1				
	33	UPIC	45	C	1134.7	1135.2	2.2				
	930	BORD	41	F	1156.7	1157.4	1.3	27	3		
	9400	HUAN	20	GRF	1407.5	1420.1	34.8	6.9	3.6		B
	2800	OTTA	20	GRF	1419	1420	30 D	4.8			
	9400	HUAN	20	GRF	1505.8	1525.7	38.5	3.4	2.5		L
	7300	SAOP	40	F	1544		48				
	9400	HUAN	20	GRF	1613.5	1635.8	31.3	4.3	1.7		L
	2800	OTTA	260	FAL	1640	1800	80	14.4	7.2		9L
	7000	SAOP	45	C	1727	1729.1	5.8	14			9L
	9400	HUAN	20	GRF	1825.5	1844.6	111.3	20.6	9.7		L
	2800	OTTA	22	GRF	1920	1911	42	3.8			
	2800	OTTA	260	FAL	2020	2030	10	4	2		
	9400	HUAN	1	S	2025.1	2026.1	1.7	6.5	2.7		B
	200	HIRA	44	NS	2030 E	0340	710 D	250	100		ML

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

SEPTEMBER 1979

DAY OF MONTH	FREQUENCY STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	MEAN	INT	POLARIZATION OR REMARKS
30	L 100 HIRA	43 NS	2150	0027	600 D	360	100		SL
	9400 HUAN	3 S	2116.6	2117.1	1.4	20.6	9.4		L

Reports received from the following observatories:

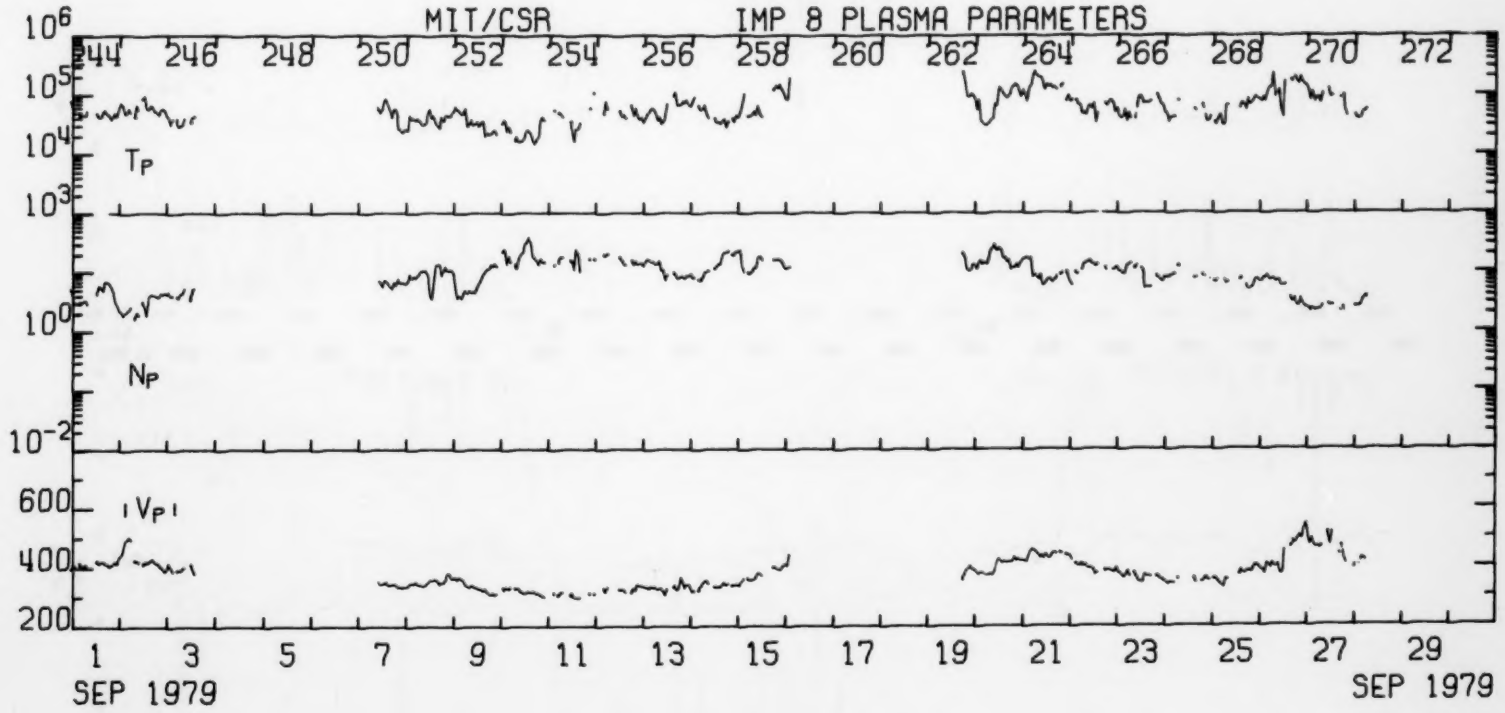
ARCE = Arcetri
BERL = Berlin-Adlershof
BERN = Berne
BORD = Bordeaux
BOUL = Boulder
CRIM = Simferopol
DWIN = Dwingeloo
GORK = Gorky
HARS = Harestua
HIRA = Hiraiso
HUAN = Huancayo
IRKU = IRKUTSK
KIEV = Kiev
MANI = Manila
MCMA = McMath-Hulbert
NAGO = Nagoya
ONDR = Ondrejov
OTTA = Ottawa
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SGMR = Sagamore Hill
SYDN = Sydney
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
VORO = Voroshilov (Ussurisk)

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

IMP 8 SOLAR WIND PLASMA

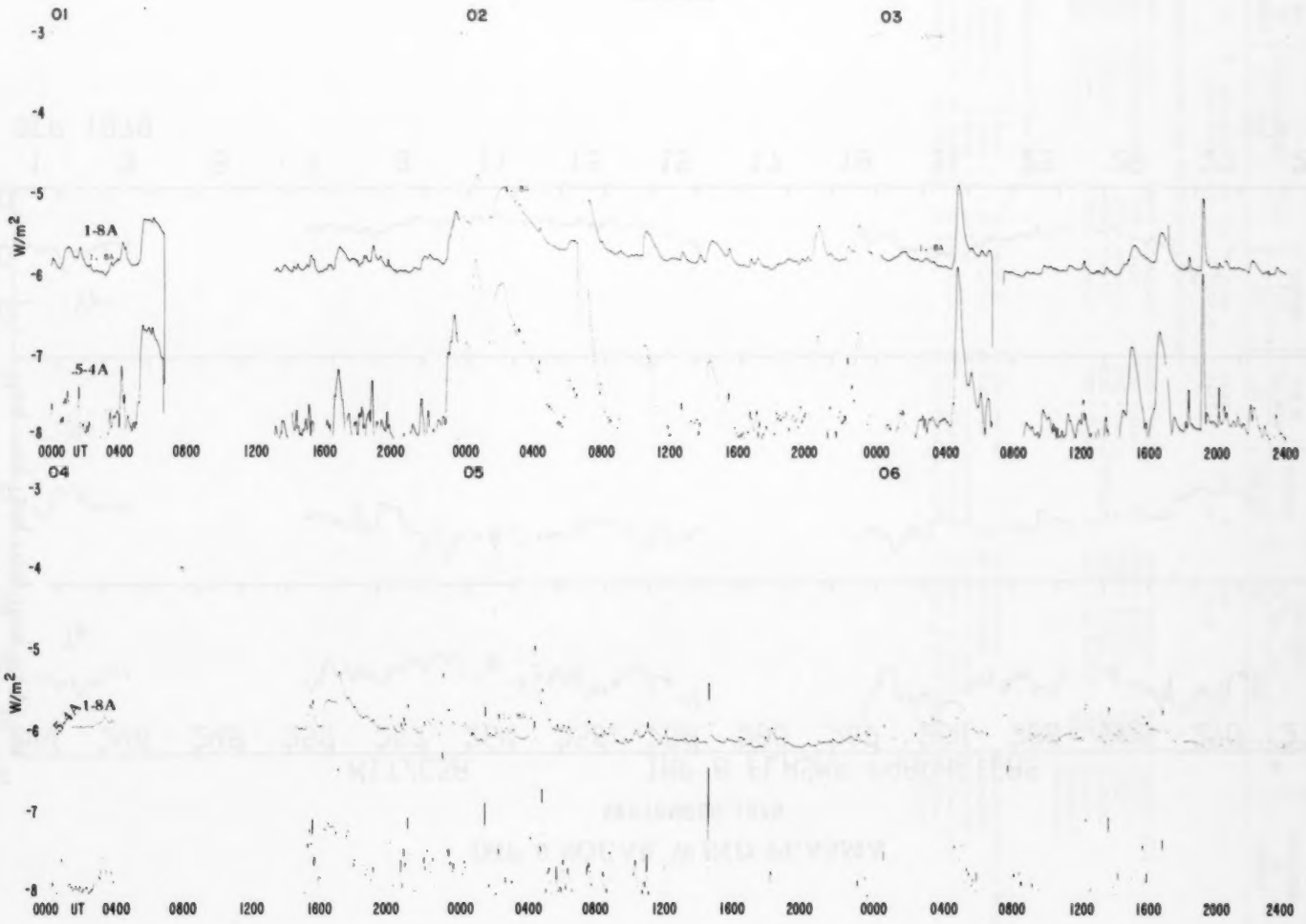
SEPTEMBER 1979



27 Sep 79

SMS-GOES X-RAYS

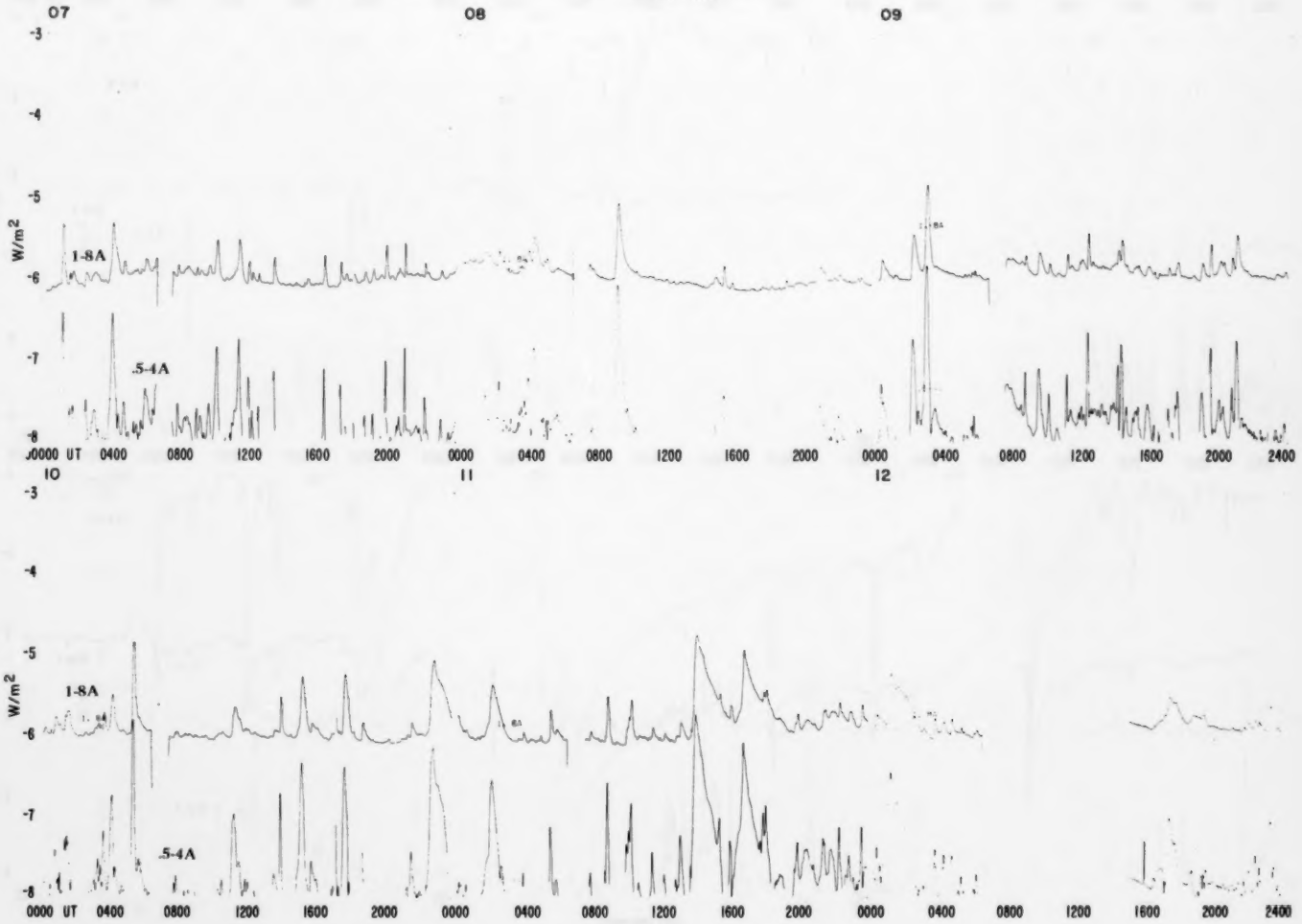
SEPTEMBER 1979



SMS-GOES X-RAYS

SMS-GOES X-RAYS

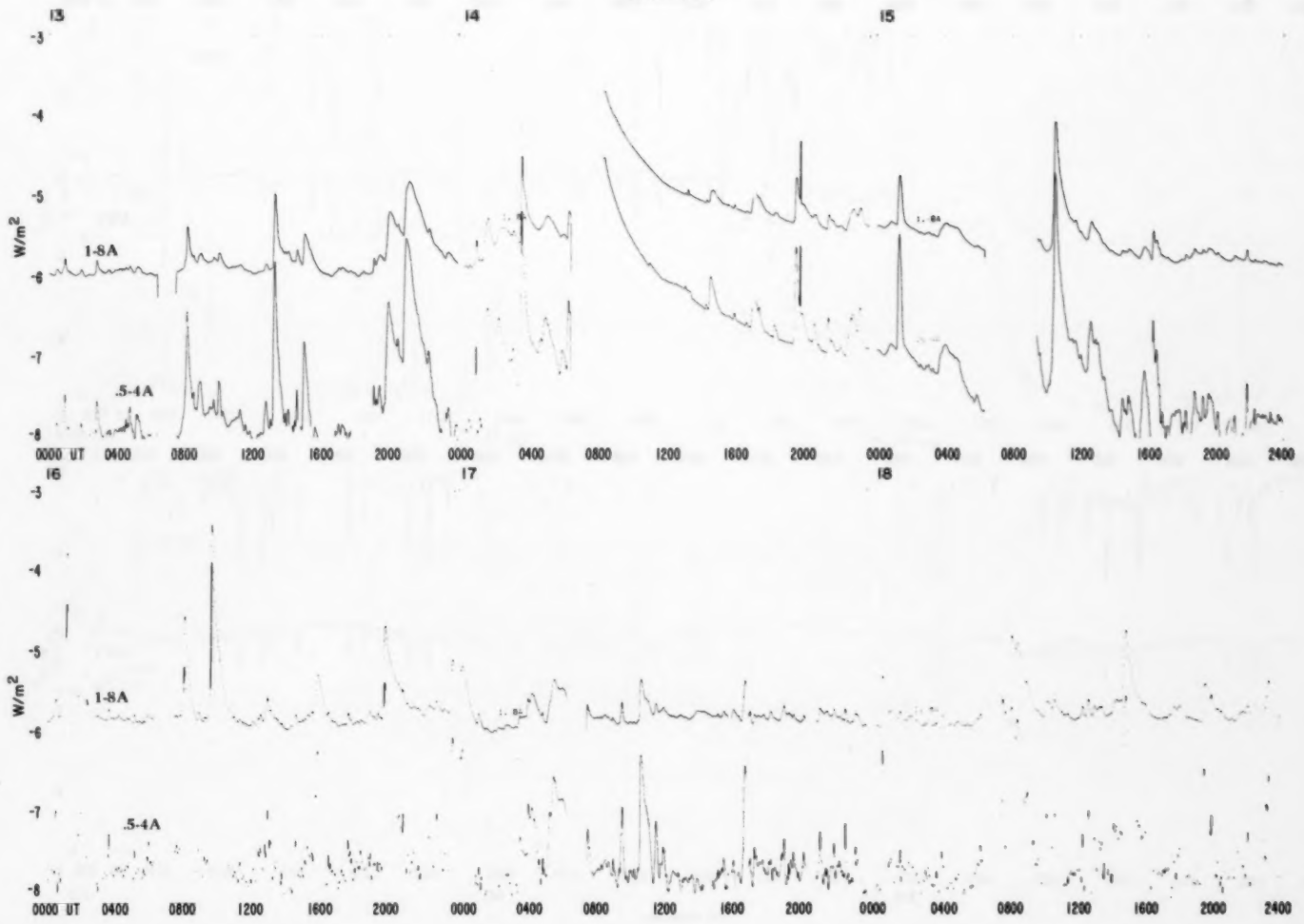
SEPTEMBER 1979



29 Sep 79

SMS-GOES X-RAYS

SEPTEMBER 1979

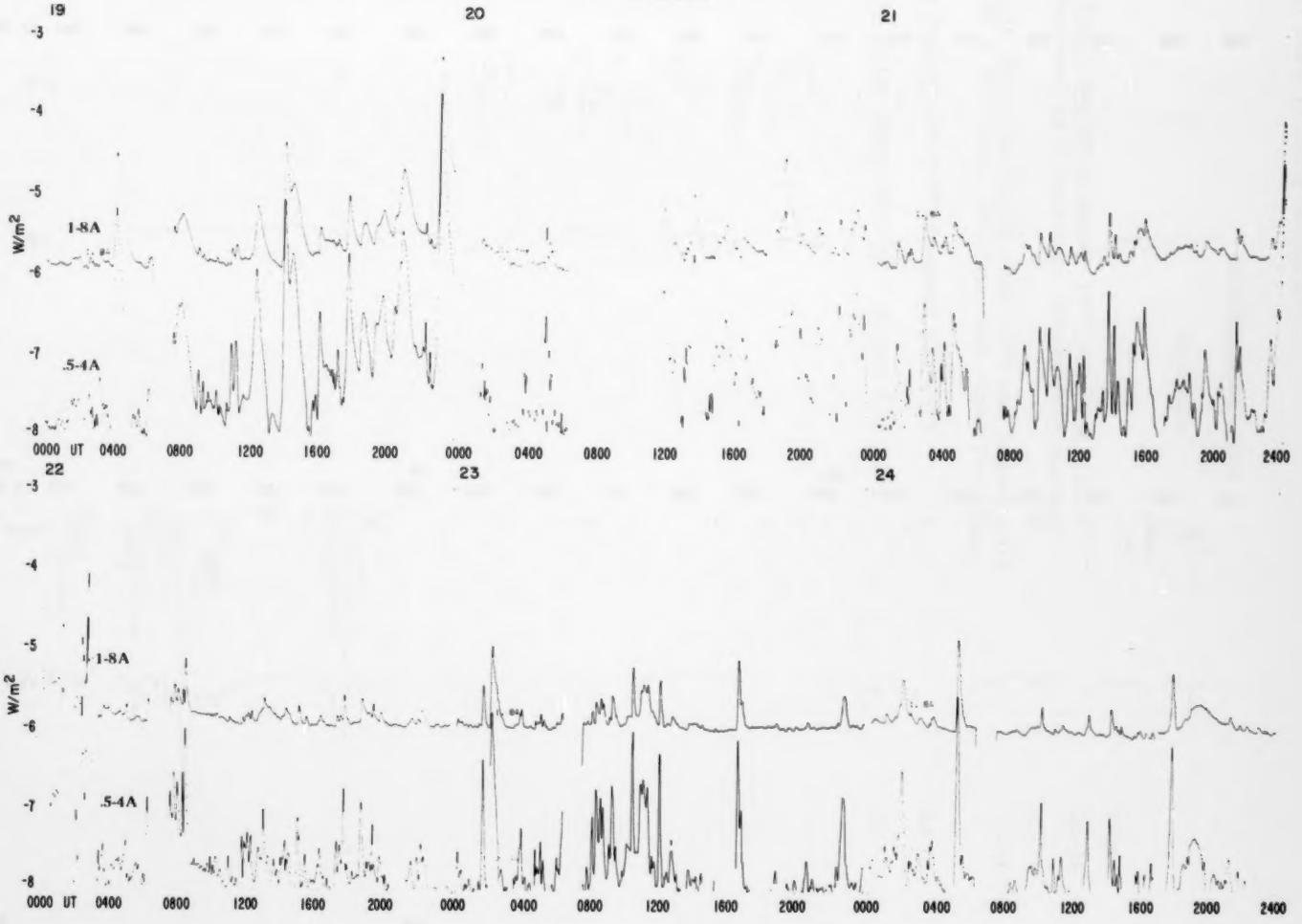


SMS-GOES X-RAYS

SEPTEMBER 1979

SMS-GOES X-RAYS

SEPTEMBER 1979



SGD 42

Solar

Energe

Active

Synopt

SGD 427 Part II (Comprehensive)

MISCELLANEOUS DATA

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SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

AUGUST 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
					UT	UT	MINUTES	PEAK	MEAN		
1	8800	SGMR	1	S	1117.1	1117.6	1.9	9.7	3.9		SWF
	4995	SGMR	3	S	1116.7	1118.2	2.1	44	13.2		SWF
	2695	SGMR	3	S	1116.8	1118	2.3	156	31.2		SWF
	1415	SGMR	3	S	1116.6	1116.7	1.9	33.3	10		SWF
	606	SGMR	3	S	1118.4	1116.5	.2	171	34		SWF
	2695	SGMR	20	GRF	1213.9	1214	124.1	16	6.2		SWF
	1415	SGMR	3	S	1412.1	1413.1	3.1	109	33		SWF
	606	SGMR	3	S	1412.1	1412.5	.9	13	3.9		SWF
	8800	SGMR	3	S	1646.8	1647.2	10	10.2	3.1		SWF
	1415	SGMR	3	S	1646.4	1650.1	3.9	44.2	8.8		SWF
2	8800	SGMR	3	S	2100.5	2106	7.9	30.9	9.3		
	4995	SGMR	3	S	2105.5	2105.9	1	24.5	7.9		
4	2695	SGMR	1	S	2020.6	2021	1.2	6	1.8		SWF
	1415	SGMR	1	S	2020.2	2020.5	.6	2.9	.9		SWF
	606	SGMR	3	S	2020.2	2020.4	.9	118	35.4		SWF
5	8800	SGMR	3	S	2020.8	2021.5	1.2	99.8	28		
7	15400	SGMR	3	S	1900	1901.7	4.3	179	54		SWF
	8800	SGMR	3	S	1900.9	1901.7	5.6	143	43		SWF
	4995	SGMR	3	S	1901.2	1901.7	5.9	93	28		SWF
	8800	SGMR	3	S	1950.5	1952.5	73.5	35.7	14.3		SWF
8	8800	SGMR	3	S	1736.3	1738.6	.7	63.7	19		SWF
	15400	SGMR	3	S	1740.6	1741.6	5.1	29.8	8.9		SWF
	8800	SGMR	3	S	1738.8	1741.7	9.7	47.5	14.3		SWF
	4995	SGMR	3	S	1737.5	1741.7	8	32.9	9.9		SWF
	2695	SGMR	1	S	1741.3	1741.9	1.2	6.2	1.9		SWF
	606	SGMR	3	S	2054	2056.7	3.3	134.2	40.2		SWF
9	8800	SGMR	3	S	1100.3	1101.1	4.1	28.6	8.6		
	4995	SGMR	3	S	1101	1101.9	3.4	10.1	3		
	15400	SGMR	3	S	1744	1744.8	3	37.5	11.4		
	8800	SGMR	3	S	1738.8	1745.2	14.2	78	23		
	4995	SGMR	3	S	1739.6	1744.6	13.4	52	16		
	2695	SGMR	1	S	1737	1744.8	11.2	9.4	3.7		
	1415	SGMR	3	S	1740.1	1744.8	6.1	13	5		
	606	SGMR	3	S	1743.6	1744.7	2.5	275	55		
13	15400	SGMR	47	GB	1012.5	1027.5	80	1278.4	383.5		SWF
	15400	SGMR	47	GB		1057		1944			SWF
	8800	SGMR	47	GB	1008.2	1030.3	103.8	1752	526		SWF
	8800	SGMR	47	GB		1057.2		871			SWF
	4995	SGMR	47	GB	1011	1030.1	99	5479	1644		SWF
	4995	SGMR	47	GB		1057.6		4828			SWF
	2695	SGMR	47	GB	1012	1034.3	100.5	2582	1230		SWF
	2695	SGMR	47	GB		1057.2		4181			SWF
	1415	SGMR	47	GB	1013.2	1017.4	98.6	428	678		SWF
	1415	SGMR	47	GB		1057.2		2907			SWF
	606	SGMR	3	S	1012	1101.6	81	428	168		SWF
	245	SGMR	7	C	1012	1020.8	99	385	77		SWF
	245	SGMR	7	C		1044		90.5			SWF
	245	SGMR	7	C		1125		153			SWF
	245	SGMR	44	NS	1151 E	2145.5	713 D	125			
	245	SGMR	48	GB	2031.9	2032.8	2.1	1222	244		
14	35000	SGMR	47	GB	1242.8	1245	35.2	2310	1430		SWF
	35000	SGMR	47	GB		1248.4		4770			SWF
	15400	SGMR	47	GB	1238.1	1244.5	69.3	5820	2720		SWF
	15400	SGMR	47	GB		1248.4		9850			SWF
	8800	SGMR	47	GB	1150.5	1244.5	123.7	8570	4890		SWF
	8800	SGMR	47	GB		1248.5		16300			SWF
	4995	SGMR	47	GB	1154.6	1244.6	122.4	6270	3480		SWF
	4995	SGMR	47	GB		1248.8		11600			SWF
	2695	SGMR	47	GB	1153.3	1244.8	123.8	3690	1860		SWF
	2695	SGMR	47	GB		1251.6		5890			SWF
	2695	SGMR	47	GB		1254.7		6200			SWF
	1415	SGMR	47	GB	1135.5	1244.8	141.4	1320	6420		SWF
	1415	SGMR	47	GB		1251.2		4980			SWF
	1415	SGMR	47	GB		1300.1		21400			SWF
	606	SGMR	47	GB	1151	1243.7	92	918	275		SWF
	606	SGMR	47	GB		1300.4		887			SWF
	245	SGMR	49	GB	1141.2	1202	182.6	360	185		SWF
	245	SGMR	49	GB		1244.5		617			SWF
	245	SGMR	49	GB		1256.6		250			SWF
	8800	SGMR	3	S	1543.5	1543.8	1	11	2.2		
	2695	SGMR	3	S	1543.8	1544	3	497	149		
	1415	SGMR	47	GB	1543.5	1543.6	7.6	3530	1060		
	606	SGMR	3	S	1543.5	1543.8	.8	50	15		
	245	SGMR	48	GB	1541.1	1543.8	8.2	5550	1110		
	245	SGMR	49	S	1727.9	1729.5	5.4	584	175		
	245	SGMR	49	S		1731.2		486			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

AUGUST 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE		STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
					UT	UT	MINUTES	PEAK	MEAN		
	2695	SGMR	3	S	2014	2014.8	20	18.6	5.6		
	1415	SGMR	3	S	2011.6	2013.8	3.1	141	42.3		
	606	SGMR	3	S	2013.3	2014.2	1.5	59.8	17.9		
	1415	SGMR	3	S	2048.3	2051.3	4	10.9	4.4		
	606	SGMR	3	S	2049	2049.3	3.4	54.4	16		
	245	SGMR	48	GB	2047.1	2049	6.4	622	188		
	245	SGMR	48	GB	2311.9	2312.1	.3	7360	1470		
15	245	SGMR	44	NS	0954 E	1440.8	627 D	572			
	245	SGMR	6	S	1134.5	1134.7	5.8	88.4	26.5		
	15400	SGMR	3	S	1527.5	1528.2	6	48	14		SWF
	8800	SGMR	3	S	1527.9	1528.3	4.6	43	13		SWF
	2695	SGMR	3	S	1527.9	1528.4	4.6	31.2	9.4		SWF
	1415	SGMR	3	S	1527.7	1528.1	6.3	353	106		SWF
	245	SGMR	6	S	1530.2	1530.6	2.2	9.6	2.9		SWF
	245	SGMR	7	S	1916.8	1916.8	.7	342	103		
16	245	SGMR	44	NS	1000 E	1655.3	819 D	523			
	606	SGMR	43	NS	1348	1438.4	107.7	72.5			
	1415	SGMR	3	S	1135.8	1213.4	51.7	29	5.8		
	606	SGMR	47	GB	1144.6	1202.2	43.4	963	597		
	606	SGMR	47	GB		1216.1		1990			
	245	SGMR	6	S	1136	1152	53.2	185	55.5		
17	245	SGMR	44	NS	0956 E	1329.1	822 D	63.2			
18	15400	SGMR	47	GB	1345	1347.4	72	473	417		SWF
	15400	SGMR	47	GB		1410.8		1390			SWF
	15400	SGMR	47	GB		1424.8		473			SWF
	8800	SGMR	47	GB	1345.5	1347.3	66.5	255	315		SWF
	8800	SGMR	47	GB		1412.6		1050			SWF
	8800	SGMR	47	GB		1425		516			SWF
	4995	SGMR	47	GB	1345.2	1347.2	72.1	198	221		SWF
	4995	SGMR	47	GB		1413.3		683			SWF
	4995	SGMR	47	GB		1425.4		736			SWF
	2695	SGMR	47	GB	1347	1348.1	71	262	221		SWF
	2695	SGMR	47	GB		1405.2		651			SWF
	2695	SGMR	47	GB		1424		735			SWF
	1415	SGMR	45	C	1346.1	1347.6	59.9	67.3	88		SWF
	1415	SGMR	45	C		1406.9		292			SWF
	1415	SGMR	45	C		1424.8		133			SWF
	1415	SGMR	45	C		1436		82			SWF
	606	SGMR	45	C	1346	1402	57	205	103		SWF
	606	SGMR	45	C		1418.2		342			SWF
	245	SGMR	49	GB	1402	1414.9	44	3960	1190		SWF
	245	SGMR	43	NS	1506.5	2034.8	509.50	254			
19	245	SGMR	44	NS	0958 E	1829.1	817 D	160			
20	245	SGMR	44	NS	0959 E	1217.2	814 D	578			
	4995	SGMR	3	S	1141.3	1143	3.7	25	7.6		
	2695	SGMR	3	S	1140.7	1143.1	11	44	13		
	1415	SGMR	3	S	1139.7	1142.5	7.7	22	6.6		
	8800	SGMR	3	S	1940.8	1944.2	8.6	28.8	11.5		SWF
21	245	SGMR	44	NS	1000 E	2150.5	812 D	493			
	8800	SGMR	1	S	1751.7	1752	2.2	9.5	2.9		
	4995	SGMR	1	S	1751.5	1751.8	1.5	9.9	3		
	2695	SGMR	3	S	1752	1752.3	4.9	14.9	4.5		
	1415	SGMR	1	S	1751.6	1751.8	6.4	8.6	2.6		
	606	SGMR	3	S	1751.3	1751.6	.8	29.9	9		
	245	SGMR	48	GB	1749.7	1751.3	3.3	1070	321		
	1415	SGMR	45	C	2236.5	2245.5	24	140	58.4		
	1415	SGMR	45	C		2249.5		146			
	606	SGMR	45	C	2243.7	2244.7	17.1	63	51.2		
	606	SGMR	45	C		2249.8		128			
	245	SGMR	48	GB	2238.3	2241.7	16.7	600	240		
	245	SGMR	48	GB		2245.2		525			
22	245	SGMR	44	NS	1001 E	2134.4	809 D	94.5			
	2695	SGMR	3	S	1854.8	1859.2	11.2	11	3.3		
	1415	SGMR	3	S	1846.1	1957.9	20.2	137	41		
	606	SGMR	3	S	1852.2	1856.9	10.2	13.6	4.1		
	245	SGMR	6	S	1851.5	1859.4	10.5	9.6	2.9		
23	245	SGMR	44	NS	1002 E	1939	807 D	215.4			
	15400	SGMR	3	S	1246.6	1251	14.1	340	112		SWF
	8800	SGMR	3	S	1243.8	1251	20.2	405	134		SWF
	4995	SGMR	3	S	1246	1251.1	23	285.1	92.7		SWF
	2695	SGMR	45	C	1246	1300.4	22	138	45.5		SWF
	2695	SGMR	45	C		1246		138			SWF
	1415	SGMR	47	GB	1249.4	1251.6	28.1	1680	554		SWF
	606	SGMR	47	GB	1248.4	1249.5	29.1	2220	733		SWF
	606	SGMR	47	GB		1254.1		780			SWF
	245	SGMR	49	GB	1249	1249.8	20.8	2060	680		SWF
	245	SGMR	49	GB		1259.8		150			SWF

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

AUGUST 1979

DAY OF MONTH	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
24	245	SGMR	44 NS	1004 E	1418	803 D	212			
	8800	SGMR	20 GRF	1156.6	1200.1	60	9	2.7		SWF
	4995	SGMR	20 GRF	1157.6	1200.5	62	36	10.8		SWF
	2695	SGMR	20 GRF	1159.8	1200.8	60	21	6.3		SWF
	1415	SGMR	20 GRF	1156.8	1201.9	60	16.8	5		SWF
	8800	SGMR	3 S	1815.2	1815.3	2.6	12.5	3.7		SWF
	2695	SGMR	1 S	1815.3	1815.5	1.7	3.6	1.1		SWF
	1415	SGMR	1 S	1816.2	1816.4	2.8	2.5	0.8		SWF
	606	SGMR	3 S	1816.5	1816.6	.3	12.6	3.7		SWF
	15400	SGMR	3 S	2152.4	2152.7	.6	30.1	9		
	1415	SGMR	3 S	2157.4	2158.3	3.7	47.6	14.3		
	606	SGMR	3 S	2157.2	2158.6	1.7	43.4	13		
25	245	SGMR	44 NS	1005 E	1239	800 D	178			
	8800	SGMR	3 S	1926.4	1927.6	1.7	82	27.1		
	15400	SGMR	3 S	1950.3	2000.1	14.9	47.1	15.5		SWF
	8800	SGMR	3 S	1950.3	1959.8	16.9	90	29.7		SWF
	4995	SGMR	3 S	1943.6	2000	25.9	111	36.6		SWF
	2695	SGMR	3 S	1945.1	2000.7	24.5	82.2	27.1		SWF
	1415	SGMR	3 S	1946	2000.5	24.8	18.9	6.2		SWF
	606	SGMR	3 S	1948.8	1949.2	15	34.2	11.3		SWF
	606	SGMR	3 S	2225.9	2226.9	1.2	71	23.4		
	245	SGMR	6 S	2225.9	2226.4	1.2	238	79		
26	1415	SGMR	43 NS	1822 E	1852.4	302 D	5			
	606	SGMR	43 NS	1823.2E	1945.7	300.8D	681			
	245	SGMR	44 NS	1806 E	1852.8	738 D	55.8			
	15400	SGMR	47 GB	1639.9	1645.4	66.3	1180	354		SWF
	15400	SGMR	47 GB		1648.5		624			SWF
	8800	SGMR	47 GB	1640.2	1647.1	63.6	1570	471		SWF
	8800	SGMR	47 GB		1649.3		1140			SWF
	8800	SGMR	47 GB		1659.1		396			SWF
	4995	SGMR	47 GB	1640.8	1647.1	59.7	645	194		SWF
	4995	SGMR	47 GB		1651.5		587			SWF
	4995	SGMR	47 GB		1659.2					SWF
	2695	SGMR	47 GB	1640.9	1647	58.3	601	180		SWF
	2695	SGMR	47 GB		1651.6		472			SWF
	2695	SGMR	47 GB		1659		386			SWF
	1415	SGMR	45 C	1639.4	1647.1	71.4	296	89		SWF
	1415	SGMR	45 C		1657		243			SWF
	606	SGMR	45 C	1645	1647	65	347	143		SWF
	606	SGMR	45 C		1650		475			SWF
	245	SGMR	49 GB	1646.6	1646.6	64.4	362	293		SWF
	245	SGMR	49 GB		1658		784			SWF
	245	SGMR	49 GB		1741		362			SWF
	8800	SGMR	3 S	1753.9	1801.9	26.4	19.1	7.6		
	4995	SGMR	3 S	1755	1801.5	22.5	147	59		
	2695	SGMR	3 S	1753.6	1802.6	29	387	92		
	1415	SGMR	45 C	1750.6	1756.5	31.4	475	143		
	1415	SGMR	45 C		1801.7		438			
	606	SGMR	47 GB	1751.8	1757.4	31.4	82600	24800		
27	245	SGMR	44 NS	1007 E	1936	795 D	140.1			
28	245	SGMR	44 NS	1008 E	1220.3	793 D	93.8			
	15400	SGMR	3 S	1253.1	1253.4	8.9	41.1	13.6		SWF
	8800	SGMR	3 S	1253.1	1253.4	8.9	94.5	31.2		SWF
	4995	SGMR	3 S	1253.1	1253.5	8.4	26.6	10.6		SWF
	2695	SGMR	3 S	1304	1308.5	12	37.5	12.4		SWF
	1415	SGMR	45 C	1303.2	1307.7	16.8	27.5	18.1		SWF
	1415	SGMR	45 C		1313.5		68.3			SWF
	245	SGMR	7 S	1413.5	1414.7	5.5	473	156		
	245	SGMR	7 S	1517	1516	1.5	269.4	36.8		
	1415	SGMR	1 S	1616.4	1818	4.4	8.7	2.6		
29	245	SGMR	44 NS	1009 E	1448.7	790 D	62.6			
30	245	SGMR	44 NS	1010 E	1308	787 D	167			
31	245	SGMR	7 S	1111	1111.6	1.1	349	69.6		
	245	SGMR	43 NS	1200.8	1618.4	675.2D	479			

Reports received from the following observatories:

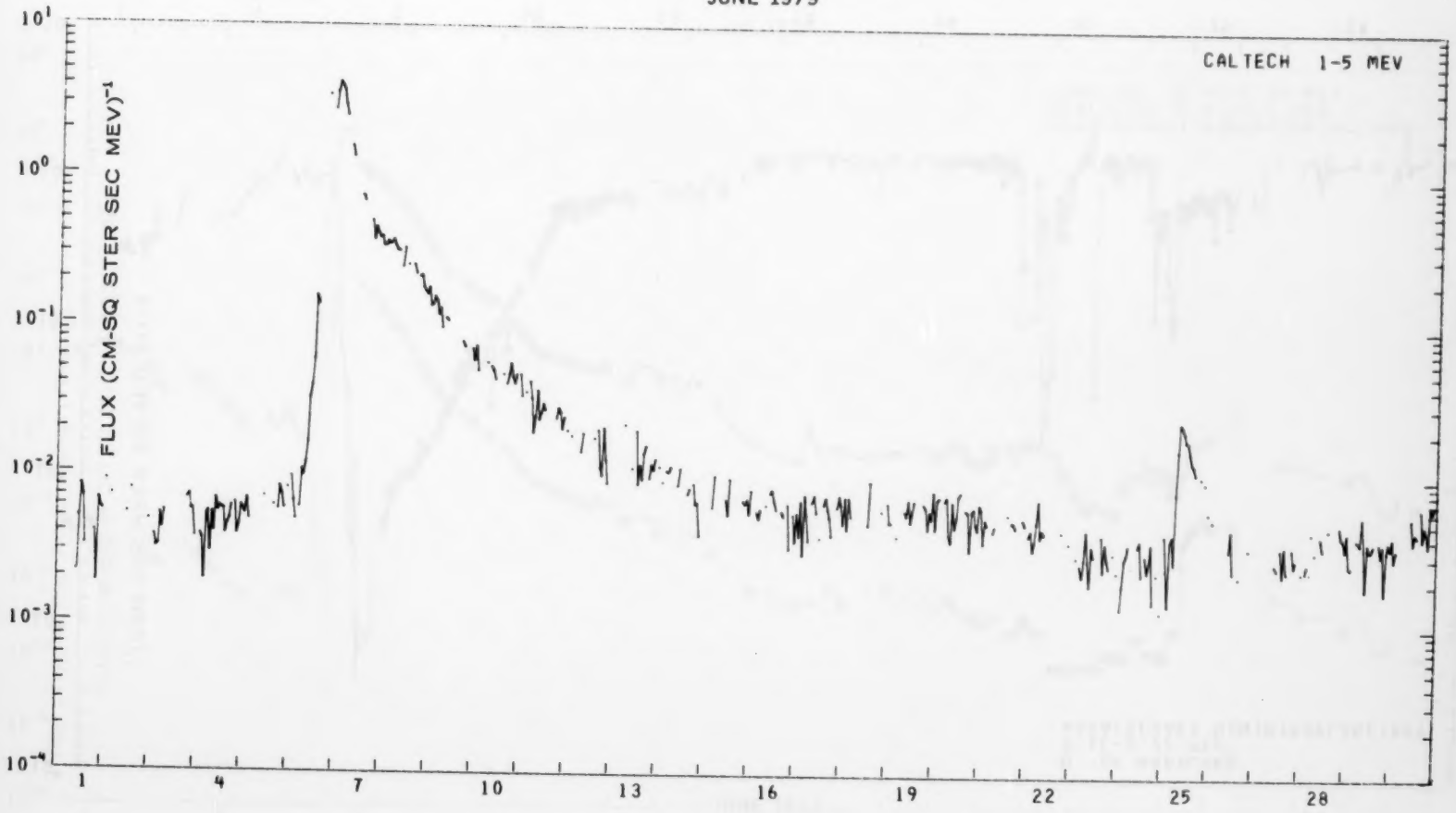
ARCE = Arcetri
BERL = Berlin-Adlershof
BERN = Berne
BORD = Bordeaux
BOUL = Boulder
CRIM = Simferopol
DWIN = Dwingeloo
GORK = Gorky
HARS = Harestua
HIRA = Hiraiso
HUAN = Huancayo
IRKU = Irkutsk
KIEV = Kiev
MANI = Manila
MCMA = McMath-Hulbert
NAGO = Nagoya
ONDR = Ondrejov
OTTA = Ottawa
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SGMR = Sagamore Hill
SYDN = Sydney
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
VORO = Voroshilov (Ussurisk)

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

IMP 8 ELECTRONS

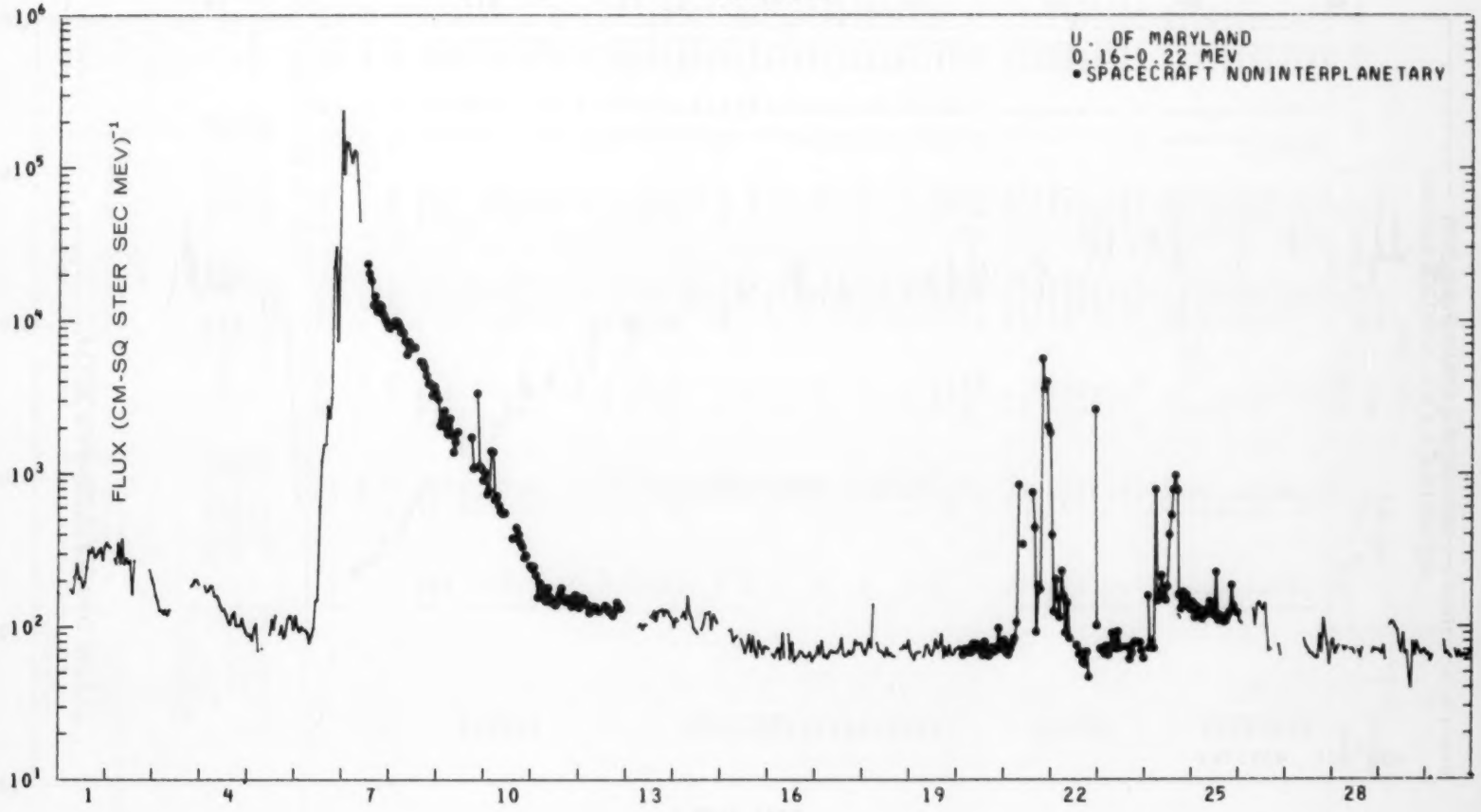
JUNE 1979



37
Misc
Jun 79

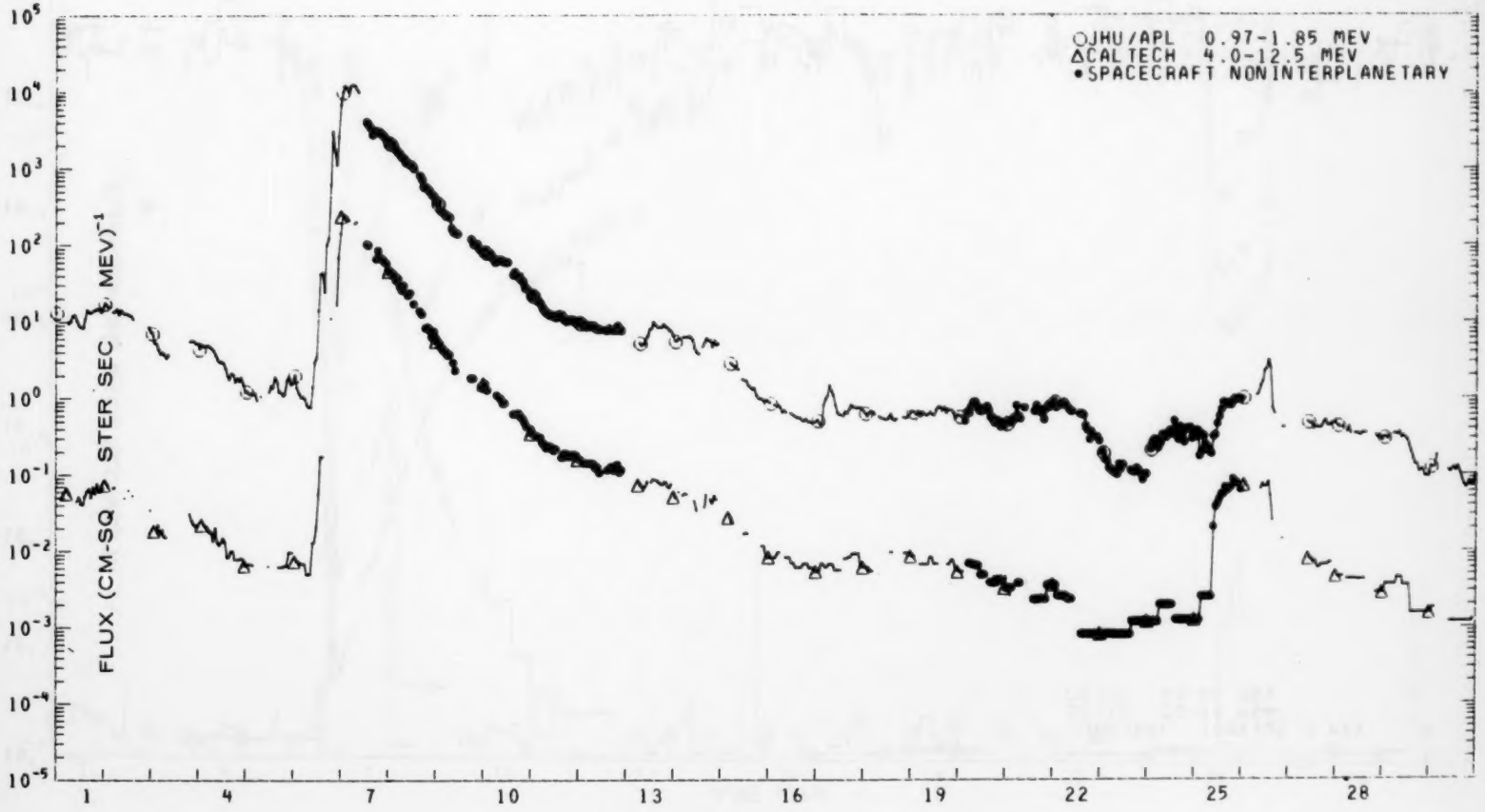
IMP 8 LOW ENERGY PROTONS

JUNE 1979



IMP 8 INTERMEDIATE ENERGY PROTONS

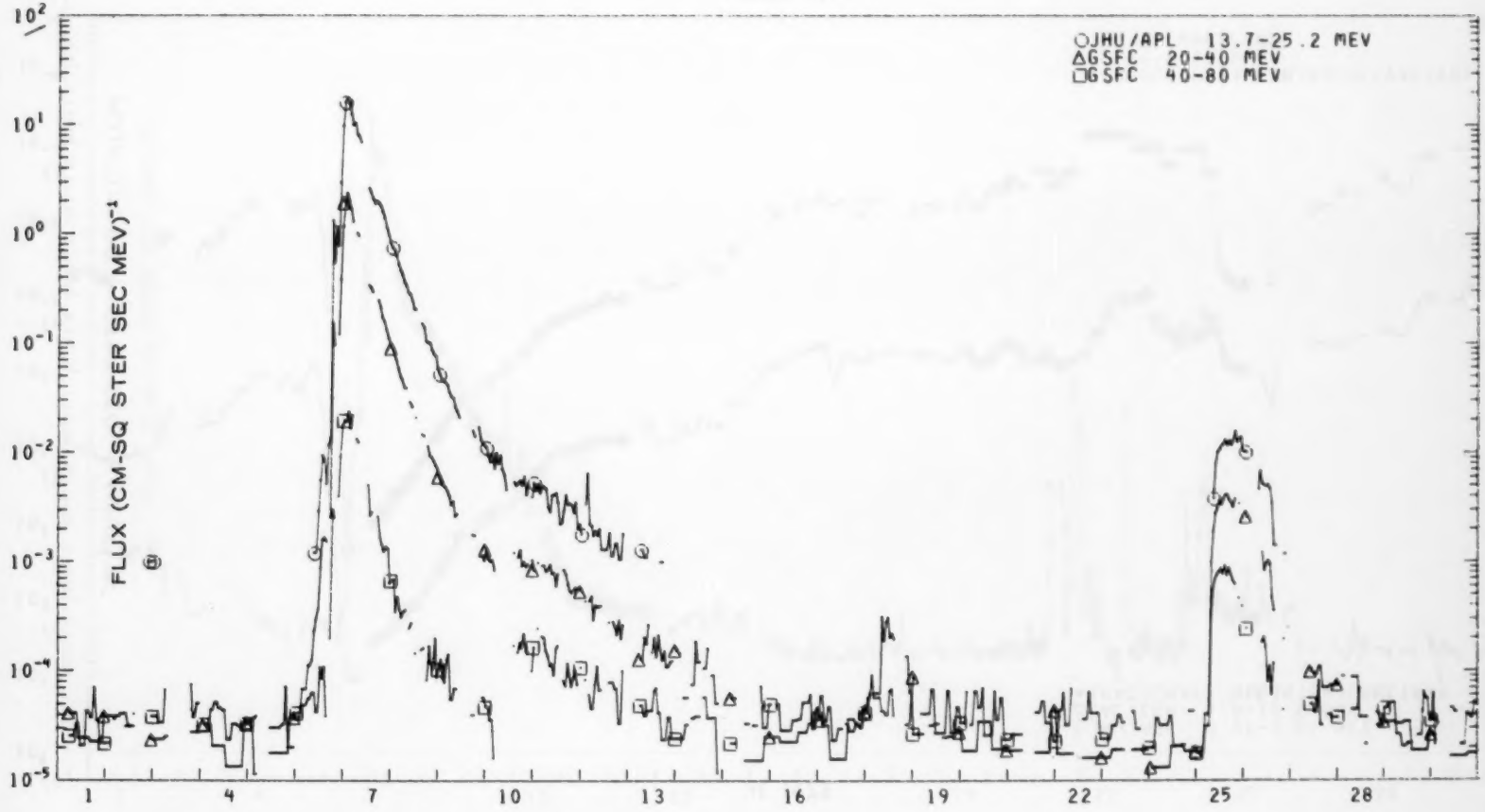
NE 1979



39
Misc
Jun 79

IMP 8 HIGH ENERGY PROTONS

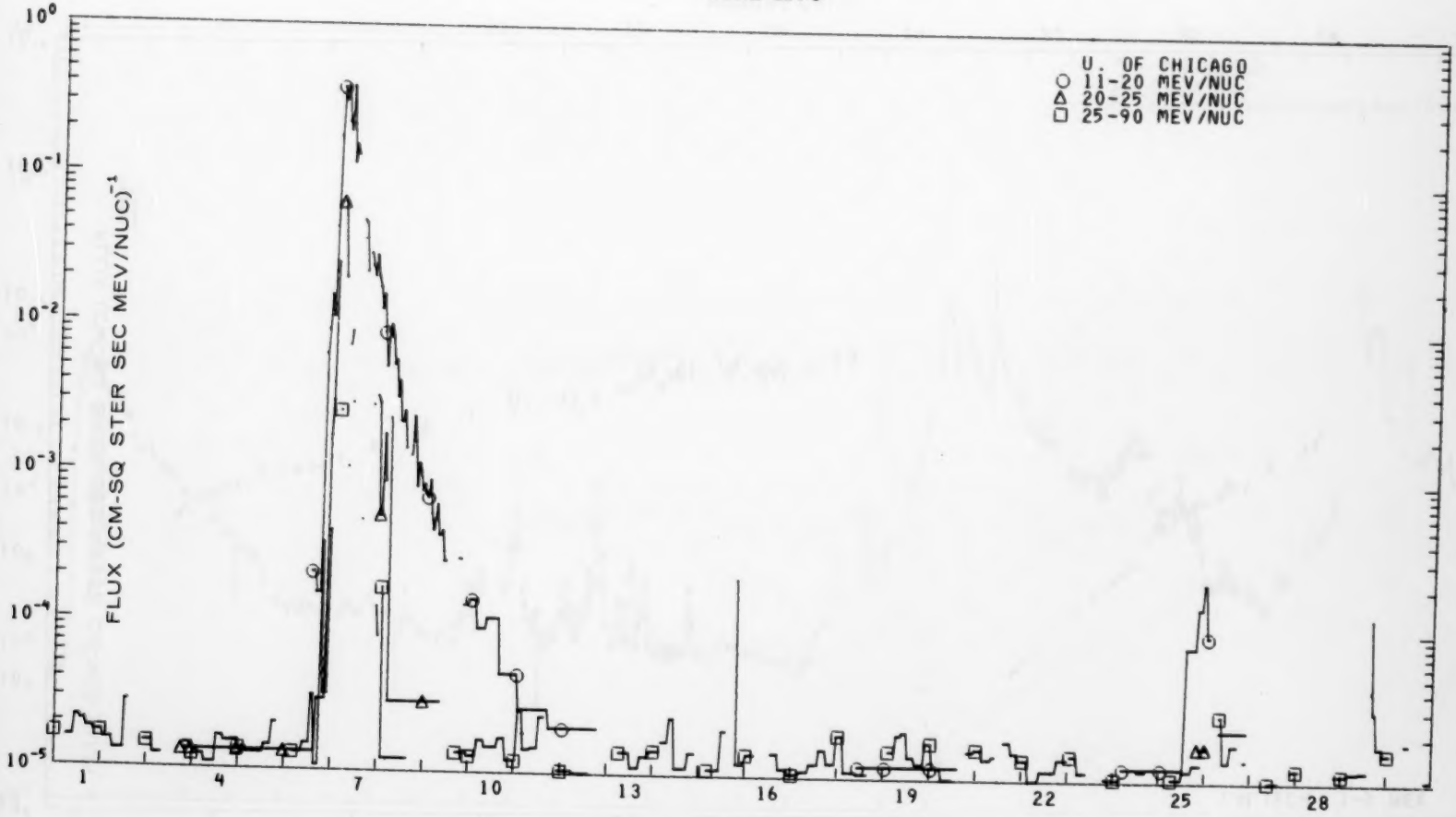
JUNE 1979



IMP 8 ALPHA PARTICLES

IMP 8 ALPHA PARTICLES

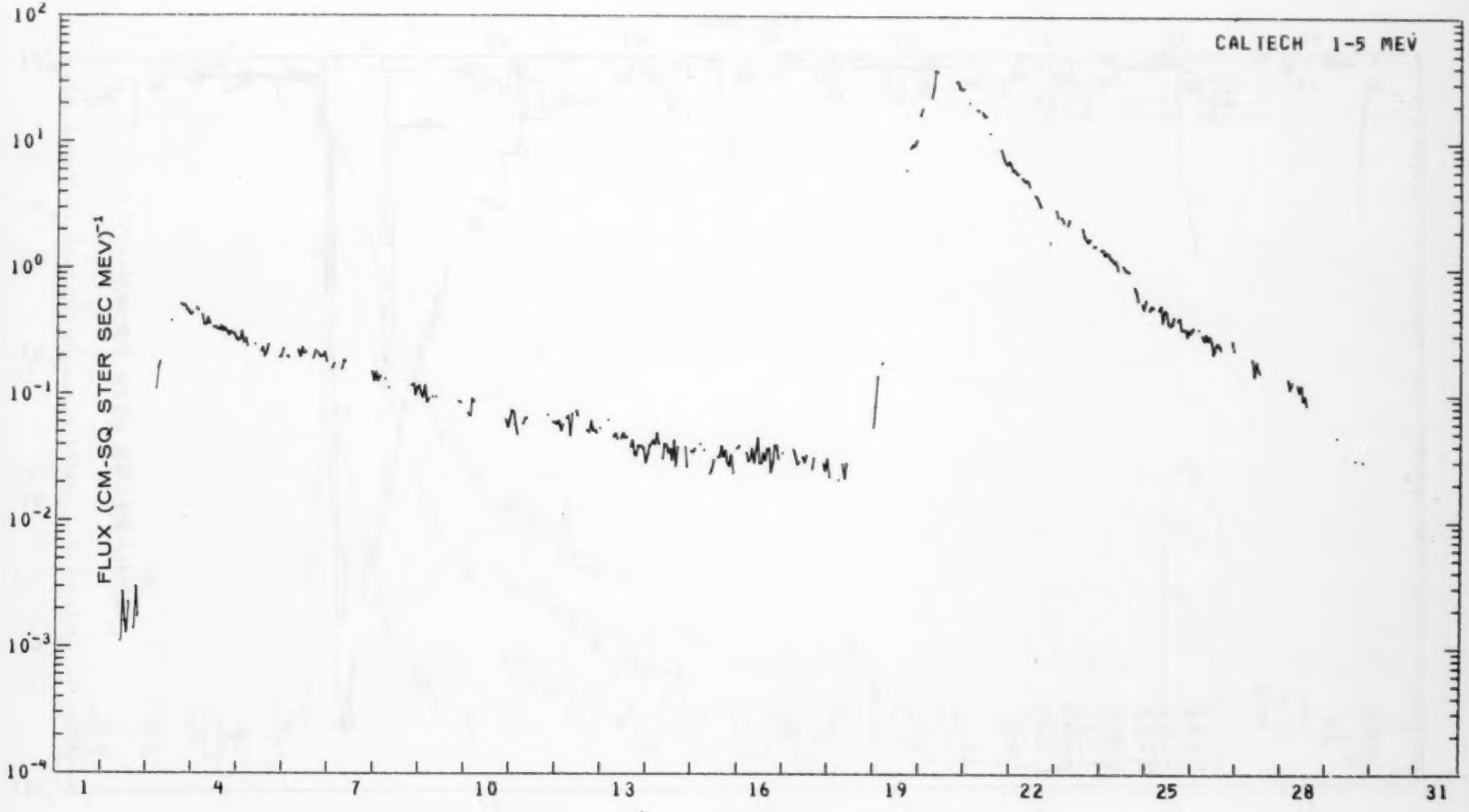
JUNE 1979



41
Misc
Jun 79

IMP 8 ELECTRONS

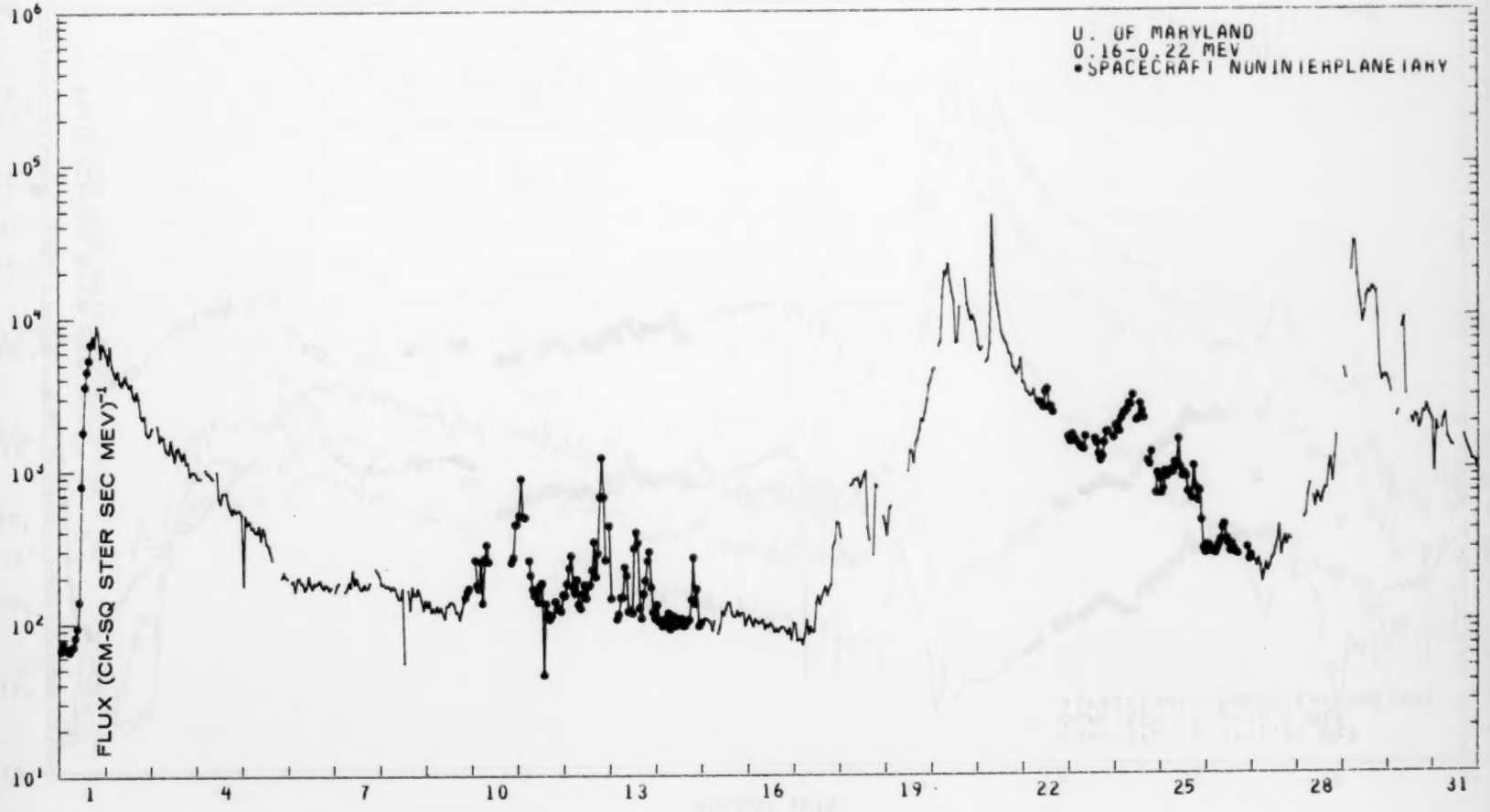
AUGUST 1979



IMP 8 LOW ENERGY PROTONS

IMP 8 LOW ENERGY PROTONS

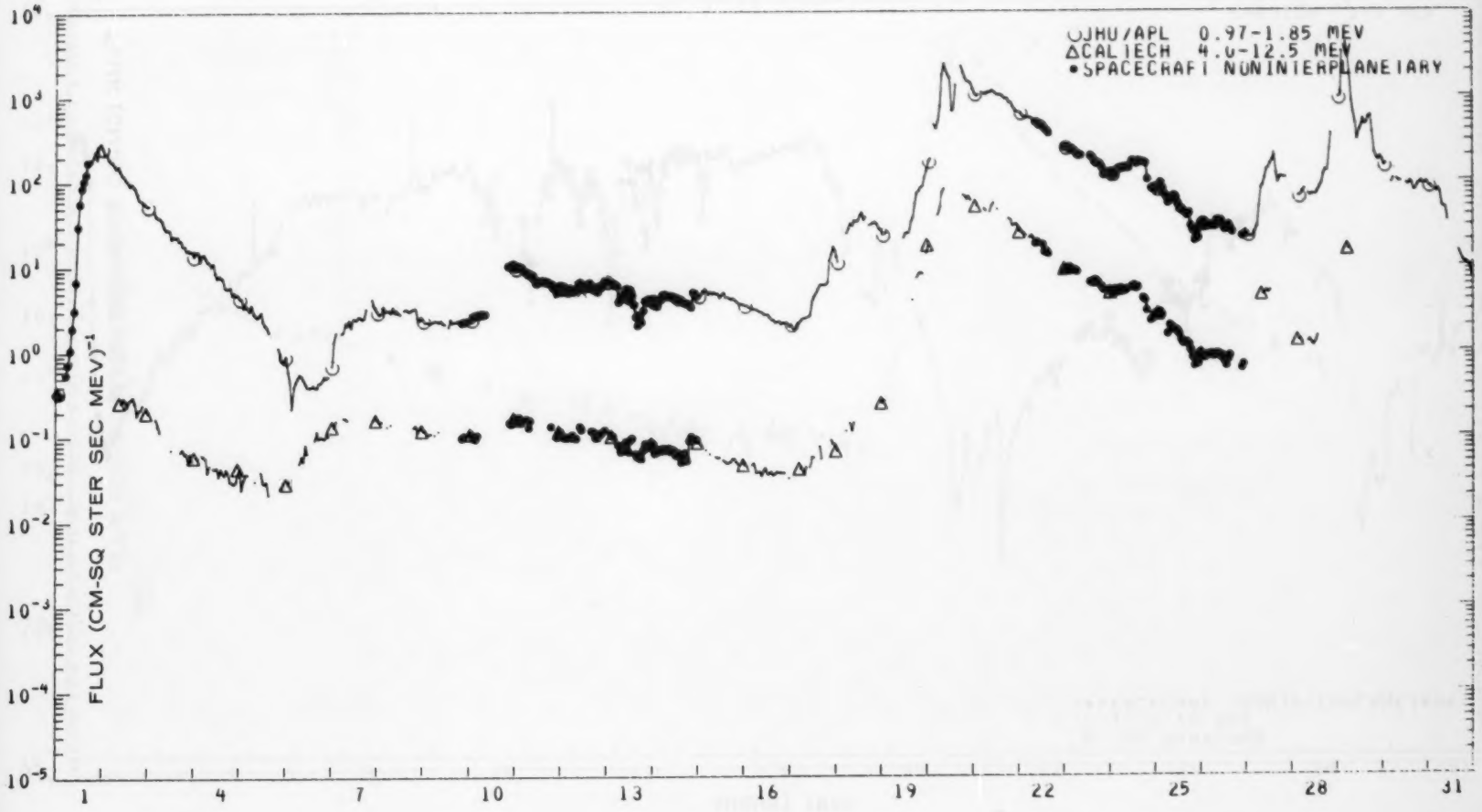
AUGUST 1979



43
Misc
Aug 79

IMP 8 INTERMEDIATE ENERGY PROTONS

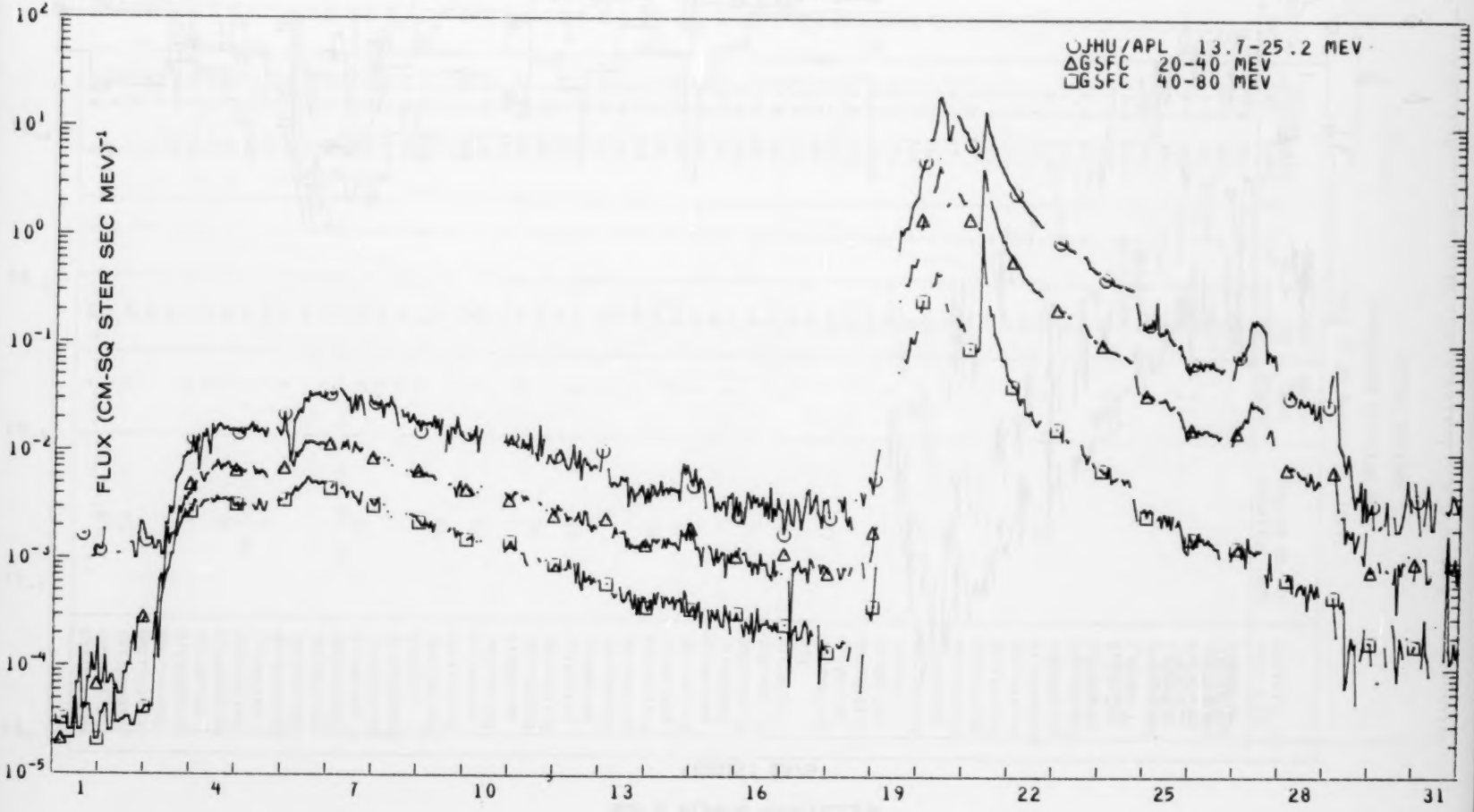
AUGUST 1979



IMP 8 HIGH ENERGY PROTONS

IMP 8 HIGH ENERGY PROTONS

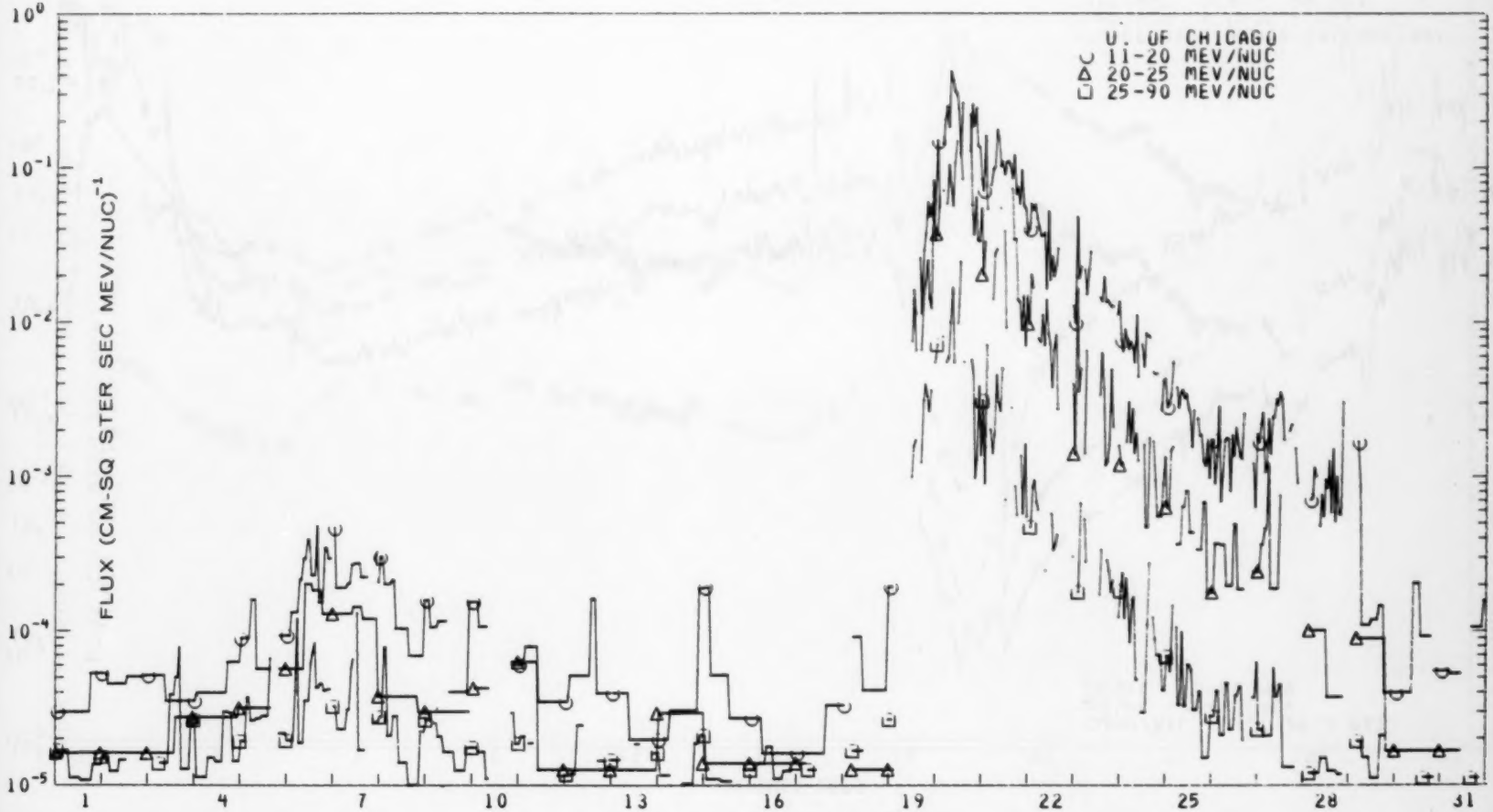
AUGUST 1979



45
Misc
Aug 79

IMP 8 ALPHA PARTICLES

AUGUST 1979



ACTIVE REGIONS

CARRINGTON ROTATION 1684

(July 17 to August 13, 1979)

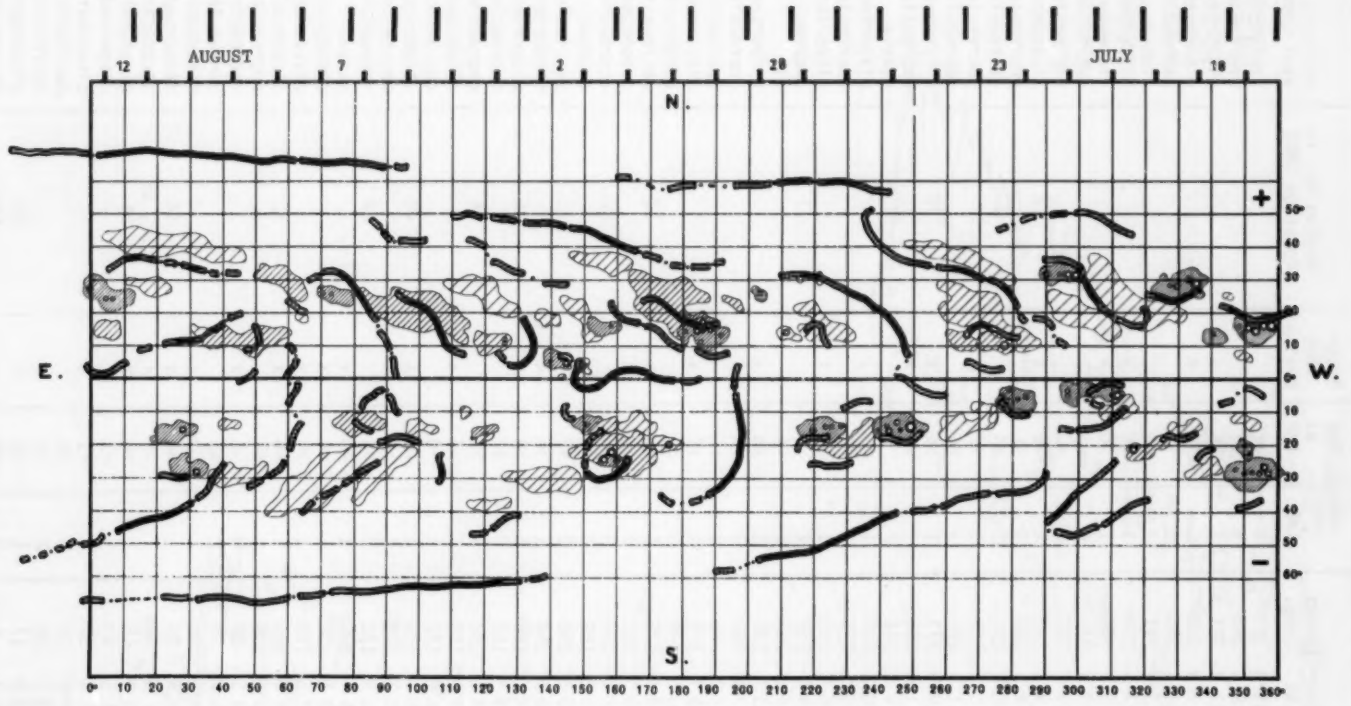
Region No.	Coordinates Lat	Long.	IMP	Age at CMP	Spot-less Region	Region No. in Rotation 1603	Activity at West Limb
1	15°N	353°	5	+1			increasing
2	28 S	353	4	>6			decreasing
3	12 S	351	1	>6	x		dispersed
4	7 N	350	1	>6	x		dispersed
5	21 S	350	2	-1			decreasing
6	13 N	341	2	-4			stable
7	27 S	338	1	>6	x		dispersed
8	15 S	332	1	>6	x		dispersed
9	29 N	331	4	>6			decreasing
10	21 S	322	3	+3			decreasing
11	9 S	312	1	>6	x	12	disappeared
12	3 S	305	3	>6			decreasing
13	32 N	295	3	+4			decreasing
14	6 S	281	3	+2			decreasing
15	11 N	276	3	>6			decreasing
16	19 N	271	1	>6	x	20	dispersed
17	11 N	265	1	>6	x	18	decreasing
18	14 S	246	4	0			stable
19	20 S	230	1	>6	x		dispersed
20	15 S	223	3	+3			decreasing
21	16 N	223	1	>6	x		dispersed
22	14 S	212	2	>6		27	decreasing
23	26 N	203	2	-4			(?)
24	23 N	195	1	>6	x		dispersed
25	17 N	188	3	-4			increasing
26	14 N	186	3	>6			decreasing
27	5 N	179	1	>6	x		dispersed
28	20 S	175	3	>6			dispersed
29	24 N	175	1	>6	x	32	decreasing
30	13 S	167	1	>6	x		dispersed
31	22 S	160	3	>6		34	decreasing
32	25 S	158	3	+2			decreasing
33	15 N	156	2	+2			decreasing
34	36 N	156	1	>6	x		dispersed
35	14 S	155	1	>6	x	35	dispersed
36	13 S	151	2	+2			decreasing
37	4 N	150	2	>6		36	decreasing
38	19 N	150	1	>6	x		dispersed
39	6 N	142	2	0			decreasing
40	18 N	139	1	>6	x	40	dispersed
41	30 S	139	1	>6	x		decreasing
42	11 N	122	2	>6		44	decreasing
43	16 S	120	1	-3	x		stable
44	18 S	120	1	>6	x		disappeared
45	10 S	114	1	>6	x		disappeared
46	14 S	101	1	>6	x	52	dispersed
47	21 N	100	1	>6		46, 48, 49	decreasing
48	13 S	82	1	>6	x		decreasing
49	25 N	74	2	>6			decreasing
50	18 N	65	1	0	x		disappeared
51	20 N	58	1	>6	x	54	dispersed
52	12 N	48	1	>6	x	57, 58	decreasing
53	29 S	45	1	>6	x	56	disappeared
54	14 S	43	1	+3	x		dispersed
55	15 N	32	1	+1	x		disappeared
56	27 S	30	2	>6			decreasing
57	17 S	26	2	>6			decreasing
58	28 N	17	1	>6	x	63	disappeared
59	25 N	4	3	>6		66	decreasing
60	15 N	4	1	>6	x		disappeared

SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1684

JULY 17 to AUGUST 13, 1979

MEUDON OBSERVATORY



SOME OTHER SOURCES OF DATA

Data Available: Some data available in publication form are cited here. A list is given, along with addresses of the responsible institutions. The WDC-A for Solar-Terrestrial Physics publishes the Toyokawa, Ottawa and Penticton radio data in its monthly publication, *Solar-Geophysical Data*. The WDC-A for Solar-Terrestrial Physics also receives most of the periodicals when they become available.

Belgium: *Bulletin d'Observations: Activite Solaire - Observations Radio-electriques Solaires - 600 MHz (Humain, Belgium)* Observatoire Royal de Belgique, Ave. Circulaire 3, Brussels, Belgium (monthly since 1962)

Canada: *Solar Noise Observations at 2800 Mc/s (Ottawa - ARO) and 2700 Mc/s (Penticton - DRAO)* Series C Monthly Report, National Research Council, Radio Astronomy Section Ottawa 7, Ontario, Canada (since 1947)

France: *Carte Synoptiques de la Chromosphere Solaire* Observatoire de Paris, 92 Meudon, France (monthly since 1931)

Germany: *Daily Mean Value of Solar Flux Density* Heinrich-Hertz Institut, 1199 Berlin-Adlershof, Rudower Chaussee 5, G.D.D. (monthly since Jul 1957)

Italy: *Solar Phenomena - Monthly Bulletin and Photographic Supplement* Osservatorio Astronomica di Roma, Monte Mario, Rome, Italy (monthly since 1958) *Osservazion Solari, Solar Flux and Distinctive Events* Osservatorio Astronomico Di Trieste (quarterly since 1965) *Solar Observations made at Catania Astrophysical Observatory* (annually since 1967)

Japan: *Monthly Report of Solar Radio Emission* Radio Astronomy Section, Research Institute of Atmospherics, Nagoya University, Toyokawa, Japan (since 1956) *Solar Activity Chart* WDC-C2, Toyokawa Observatory, Nagoya University, Toyokawa, Japan (annually since 1968) *IAU Quarterly Bulletin on Solar Activity* Tokyo Astronomical Observatory, Mitaka, Tokyo, Japan (since 1978)

Netherlands: *Geomagnetic Data* IAGA Bulletin No. 12 (1932-69), No. 32 (since 1970) IUGG Publications Office, 39 ter, Rue Gay-Lussac, Paris V, France (annually)

Taiwan: *Report on Sunspot Observations* Taiwan Provincial Weather Bureau Observatory, Taipei, Taiwan (quarterly since 1957)

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UAG-42 "Observations of Jupiter's Sporadic Radio Emission in the Range 7.6-80 MHz 10 December 1971 through 21 March 1975", by James W. Warwick, George A. Dulk, and Anthony C. Riddle, Department of Astro-Geophysics, University of Colorado, Boulder, Colorado 80302, April 1975, 49 pages, price $1.15.

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UAG-48A "Synoptic Observations of the Solar Corona during Carrington Rotations 1580-1596 (11 October 1971 - 15 January 1973)", [Reissue with quality images] by R. A. Howard, M. J. Koomen, D. J. Michels, R. Tousey, C. R. Detwiler, D. E. Roberts, R. T. Seal and J. D. Whitney, E. O. Hulbert Center for Space Research, NRL, Washington, D. C. 20375 and R. T. and S. F. Hansen, C. J. Garcia and E. Yasukawa, High Altitude Observatory, NCAR, Boulder, Colorado 80303, February 1976, 200 pages, price $4.27.

UAG-49 "Catalog of Standard Geomagnetic Variation Data", prepared by Environmental Data Service, NOAA, Boulder, Colorado, August 1975, 125 pages, price $1.85.

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UAG-52 "Experimental Comprehensive Solar Flare Indices for Certain Flares, 1970-1974", compiled by Helen W. Dodson and E. Ruth Hedeman, McMath-Hulbert Observatory, The University of Michigan, 895 Lake Angelus Road North, Pontiac, Michigan 48055 U.S.A., November 1975, 27 pages, price 60 cents.

UAG-53 "Description and Catalog of Ionospheric F-Region Data, Jicamarca Radar Observatory (November 1966 - April 1969)", by W. L. Clark and T. E. Van Zandt, Aeronomy Laboratory, NOAA, Boulder, Colorado 80302 and J. P. McClure, University of Texas at Dallas, Dallas, Texas 75230, April 1976, 10 pages, price 33 cents.

UAG-54 "Catalog of Ionosphere Vertical Soundings Data", prepared by Environmental Data Service, NOAA, Boulder, Colorado 80302, April 1976, 130 pages, price $2.10.

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UAG-56 "Iso-intensity Contours of Ground Magnetic H Perturbations for the December 16-18, 1971 Geomagnetic Storm", by Y. Kamide, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, Colorado 80302 and Geophysical Institute, University of Alaska, Fairbanks, Alaska 99701 (currently Guest worker at Data Studies Division, NOAA/EDS/NGSDC, Boulder, Colorado 80302), April 1976, 37 pages, price $1.39.

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UAG-59 "Auroral Electrojet Magnetic Activity Indices AE(11) for 1974", by Joe Haskell Allen, Carl C. Abston and Leslie D. Morris, National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service, December 1976, 144 pages, price $2.16.

UAG-60 "Geomagnetic Data for January 1976 (AE(7) Indices and Stacked Magnetograms)" by J. H. Allen, C. C. Abston and L. D. Morris, NGSDC/EDS/NOAA, July 1977, 57 pages, price $1.07.

UAG-61 "Collected Data Reports for STIP Interval II 20 March - 5 May 1976", edited by Helen E. Coffey and John A. McKinnon, National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service, August 1977, 313 pages, price $2.95.

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UAG-66 "Synoptic Radio Maps of the Sun at 3.3mm 1970-1973" by Earle B. Mayfield, Space Science Lab., and Fred I. Shimabukuro Electronics Res. Lab., The Ivan A. Getting Laboratories, The Aerospace Corp., El Segundo, California 90245, May 1978, 30 pages, price 75 cents.

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